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The May number of the OPHTHALMIC RECORD will contain amongst others, an original article by J. L. Borsch, M. D., "The Closed Artificial Eye;" one by John O. McReynolds, M. S., M. D., "Pterygium Operation. Method by Subconjunctival Antero-Inferior Fixation;" one by Don M. Campbell, M. D., "Two Fatal Cases;" one by Ella Rosalind Wylie, M. D., "Parinauds Conjunctivitis;" one by S. Mitchell, M. D., "Large Wounds in the Sclerotic; Loss of Vitreous; Recovery of Good Vision." There will also appear Editorials, Abstracts, Reviews, Society Reports, Personals and Items of Interest to the Profession.

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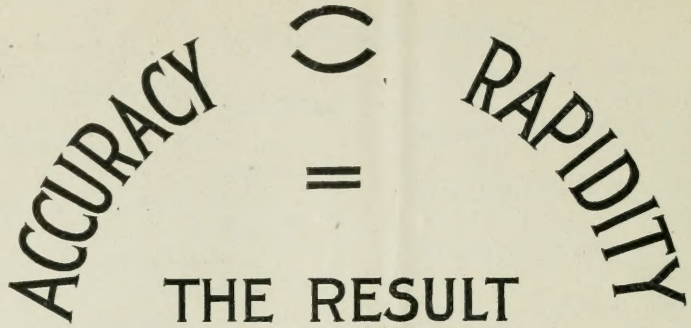

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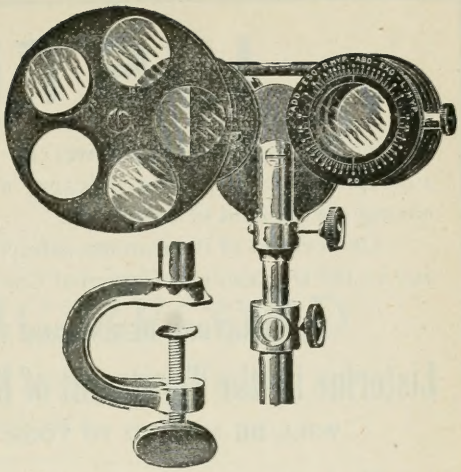

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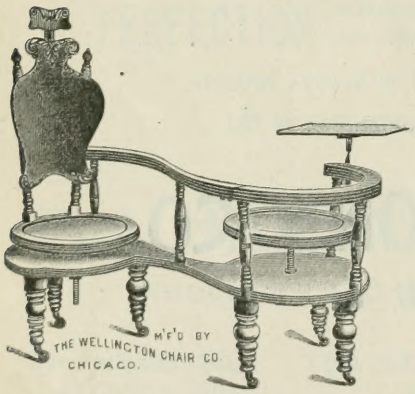

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THE

OPHTHALMIC RECORD

A MONTHLY REVIEW OF THE PROGRESS OF OPHTHALMOLOGY.

VOLUME X. CHICAGO, APRIL, 1901. No. 4. NEW SERIES

ORIGINAL ARTICLES.

SOME RESULTS OF DR. ALLPORT'S SIGHT TESTS APPLIED TO CHICAGO SCHOOL CHILDREN.*

BY. CHAS. C. KRAUSKOPF.

Of the Child-Study Department, Chicago Public Schools, Chicago, Ill.

ILLUSTRATED.

A year ago last September the Department of Child-Study of the Chicago Public Schools began its first regular work. During all of last year the most important line of investigation was the problem of "The Physical Basis of Dullness." Of the nine tests and measurements used regularly in this work only sight and hearing came under the head of "sensory." Therefore, while the department employs (especially in the diagnosis of peculiar cases) most of the sensory tests which are adapted to use with children, statistical work has been done in these two lines only.

To eliminate as far as possible local or peculiar conditions the schools in which this work was carried on were carefully selected as to good light, good sanitary condition of building, healthful neighborhood, and also with a view to obtaining as high a percentage as possible of children of American-born parents, thus securing normal American children.

Among the interesting and valuable results of the compilations thus far secured are those in regard to sight, and this paper will be limited to the discussion of that subject. The only test of sight regularly applied in these tests was the determination of the visual acuity

* Address delivered before the Child-Study Section of the Illinois State Teachers Association, Dec. 27, 1900.

by the use of Snellen's test types, this being the test recommended by Dr. Frank Allport, Consulting Oculist and Aurist to the Department.

In the compilation of the statistical results there has been time for the partial study of but three problems: (1) The determination of the percentage of pupils having defective sight from year to year throughout school life, thus showing the defect of school work and life upon sight. (2) The effect of defective vision upon the mental capacity of the pupil as measured by his school standing. (3) The relation between the general physical condition of the individual and sight.

In the study of the relation between school life and sight the pupils were grouped as to age by years, and at each age the percentage of pupils having defective eyes was calculated. Included in this class of "defective" are all those whose visual acuity falls as low as 20-300 or lower in one or both eyes. The upper line of Chart No. 1 gives a graphic representation of the result. On their entrance to school at six years of age 32 per cent of the pupils are found with defective eyes, a rather serious condition to be faced by those inclined to ridicule the idea of testing the eyes of young children. But fully as important and interesting is the movement of this curve as it passes through the years of school life.

Age.	Number tested.	$\frac{20}{30}$ or Below, in one or both eyes; per cent.	$\frac{20}{40}$ or Below; per cent.	$\frac{20}{70}$ or Below; per cent.	$\frac{20}{200}$ or Below; per cent.
6.....	264	32	7	1	0
7.....	363	35	8	2	1
8.....	351	38	13	3	1
9.....	343	44	17	6	1
10.....	364	43	18	9	2
11.....	385	41	17	8	2
12.....	364	36	16	9	2
13.....	373	30	14	9	2
14.....	450	32	14	9	3
15.....	521	32	15	9	3
16.....	475	32	16	11	4
17.....	339	32	16	12	4
18.....	173	32	16	10	8
Total tested...	4765				

Table I. Percentige of pupils found defective at different ages. See Chart 1.

The percentage of children with defective sight rises steadily and rapidly until between the ages of nine and ten, when it reaches its highest point and begins to descend. This descent, which of course means

an average improvement in the eyesight, is very slow though steady until during the eleventh year; it then drops even more rapidly than it rose at first, reaching its lowest or best point between thirteen and fourteen, then after a slight rise continues at practically the same height until after school age is past.

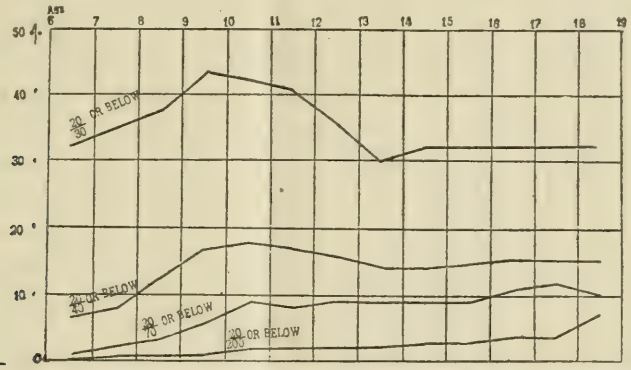

Fig. 40.—School Life and Sight. (Based upon Examination of 4765 Pupils.)

CHART I.

For data see Table 1.

All very interesting and no doubt true, but what does it mean?

First of all, in defense of our much maligned public schools, it seems to indicate that at least in our well-lighted buildings in healthful districts school life as a whole is not responsible for any great permanent increase in the number of eye troubles if all defects, small and large, are considered. In other words, under the above conditions the children leave school as they began it, with about 32 per cent of their number more or less defective as to eyesight. But this is not saying that school life is harmless or a negative factor. The curve is not straight and in this lies its most important lessons. Its changes in direction divide it into three rather well defined portions. First, a period of increasing eye trouble followed by a period of first slow then rapid improvement in eyesight, and, third, a period of practically no change in the average condition of the eyes.

The first division of the curve shows that the early years of school life are years of increase in eye defects. By internal evidence appearing in the compilation of these results it is pretty conclusively proven that this unfortunate state of affairs is due, primarily, to school work and conditions. Just what factors in school life or portion of the school

work are responsible for this has not been definitely determined. Superintendent Cooley of the Chicago schools has pointed to the fact that the surfacing of our school blackboards in spite of every care often gives painful direct reflections instead of having a dead surface restful to the eyes. It is also true that the lower grades are given a greater proportion of work from the blackboard than the more advanced. Attention has been called to the forced confinement, poor air, long hours and crowded conditions of our primary rooms, after coming from homes or kindergartens, all of which may affect the eyesight through the lowering of the general health. A local condition in Chicago is that the primary rooms are all on the first floor, where the light is likely to be the poorest. When a person is looking at distant objects the delicate muscles of the eyes are relaxed and at rest; when doing close work on the contrary these muscles are continually in a state of contraction. The more careful the attention required the greater the strain. This makes the process of learning to read particularly trying to the eyes. In the first place, reading is the interpretation of symbols appealing to sight alone, and no direct assistance can be rendered through other sensory tracts. Further reading being the most convenient tool in educational work, a great effort is usually made to master it during the early years of school. In reading, an adult can get the meaning from the printed page when seeing only portions of the important words and giving scarcely a glance at the smaller ones, while the child in learning to read is compelled to notice each part of every letter in order to identify the words. Dr. Cohn, the great German authority, has compared the child's eye strain in this process to that of an adult in the use of a microscope. The fact to be noted, however, is that the work and conditions of these three or four first years of school life seem to be synonymous with misuse or over-use of the eyes.

When this crisis is past a happier condition prevails. The sharp turning of the curve at nine and a half does not mean that each child's eyes grow worse until that year and then suddenly begin to grow better, but that somewhere near this age the eyes of many of the pupils begin to improve, the average centering at that point. For a year or more, as shown by the curve, the recovery is slow but steady, following the relief from learning to read and adjustment to school conditions; but before the eleventh year many children begin that series of rapid changes in growth and development which ends in manhood and womanhood. It is a period of poor general health, and the changes in

sight appearing here are due to that fact and have little connection with school work, and indeed go on in spite of school life and conditions. For the rest of the time, that covered by the third division of the curve, no significant change is noticed; the slight rise after fourteen is probably due to the fact that at thirteen and earlier most of those examined were in the grammar grades, about equally divided in sex, while at fourteen and older the large majority were high school pupils, of whom nearly three-fourths were girls. These high school pupils are a selected class of the most studious from many grammar school buildings. The regularity of the curve through these high school ages does not mean that there is no change in individual cases. That the sight may become worse during this period through accident or overwork is a matter of common experience. On the other hand a nearly equal number of persons must have had some improvement in eyesight during the same time, to have the curve of averages a straight line showing no rise or fall in the per cent of defectives.

This upper curve includes all defective pupils, even those with but one eye slightly below normal. The second curve on the chart is obtained by disregarding the minor defects, and represents a class who are $\frac{2}{4}\frac{0}{0}$ or below in one or both eyes. The percentage was calculated at each age as before. The first significant thing is the great distance between the two curves. This distance represents the percentage of the pupils having only slight visual defects, and shows that considerably more than half of those counted defective are only slightly below normal in visual acuity. Many of these slighter defects, however, are productive of both immediate distress and serious consequences if neglected.

The second curve follows the same general course as the one above for essentially the same reasons. It differs from the first curve in that the rate of increase of defectives in the early years is more rapid, the improvement which follows this rise does not begin so early as in the first curve, is not so rapid and is very small in amount, which would seem to show that these more serious cases are more easily increased in gravity and recover very much more slowly than those with slighter defects, and the latter part of the curve continuing to the end so much higher than at the beginning shows how few of the pupils with these graver troubles ever recover completely. It is then the slighter defects that may be expected to show most improvement during the adolescent period.

The third curve gives those cases where the visual acuity is $\frac{20}{70}$ or lower in one or both eyes. Starting with but a few cases (about one per cent at six years old), this curve shows a much higher rate of increase than either of the others, and it reaches the end of its first rise between ten and eleven instead of a year earlier. Another serious thing is that from this point on there is no recovery even during the period of improved health; in fact there is a steady increase in the percentage since the irregularities of the line are due, to a considerable extent, to a paucity of numbers.

As a school problem, the lowest curve is hardly so interesting as the others. It includes only those having a visual acuity of $\frac{20}{200}$ or less in one or both eyes. This is almost blindness, and is usually due to accident, or amblyopia, and the child will probably be seriously defective in spite of all care. The curve rises steadily as we should expect, because the chance of accident increases with age. School life, of course, adds to the trouble, but hardly in a way for which the school could be blamed.

The relation between school life and sight, so far as determined, seems to be briefly, this: The slighter eye defects are found to increase rapidly during the first three or four years of school life, and of this increase school conditions and work seem to be in some degree the cause. Following these years is a period when natural conditions of growth and development overcome all unfavorable forces both in and out of school, resulting in a rapid improvement in the eyesight; while later through high school life no material increase or decrease can be detected. The more serious cases seem also to show the effects of early school work and to continue to increase steadily throughout school life, but for this, especially when the visual acuity is exceptionally low, it does not seem just to hold the schools responsible.

Some of the interest and importance of the changes in visual acuity as shown by these curves depends upon the solution of the second problem, viz., the effect of defective vision upon the pupils' mental capacity. This question is but one phase of the subject of the physical basis of dullness. In the investigation of this broader problem it was found that not only was Porter right in his statement that the dull and backward pupils averaged smaller and lighter than their brighter and more advanced companions, but that the children who were mentally superior, on the average, showed physical superiority also in every test and

measurement taken, including the sensory tests.* This means, in the case of sight, not that there are no bright children ahead of their grades with poor eyesight, but that on the average defective eyes hinder the advancement of the pupils. The most convenient and accurate measure for a pupil's mental capacity was found to be the school standing as shown by his age in comparison with his grade. The pupils were divided into two groups. Those in or above the proper grade for their respective ages were placed in one group, while those below grade formed the second division. The percentage of pupils subnormal in vision was calculated for each age in each group (see Table II). The curve formed by the solid line on Chart No. 2 shows those at and above grade, and the curve formed by the dotted line those below grade.

Age.	8	9	10	11	12	13	14	15	16	17
No. Examined.	296	245	220	172	185	206	321	85	256	178
Per Cent. found defective among Pupils at or above Grade.	40%	47	39	39	34	27	32	32	31	30
No. Examined.	65	98	144	213	179	167	129	436	219	161
Per Cent. found defective among Pupils below Grade.	32	34	48	43	40	33	33	34	32	33
No. Examined.		2	10	10	54	47	65	51	24	7
Per Cent. found defective among Boys of Prison School		0	80	50	46	55	52	30	54	29

Table II, giving comparison between bright and dull pupils as to number of pupils defective in eyesight per hundred. Also boys of the prison (John Worthy) school. See Chart II.

Those above grade at eight years old average more eye defects than those below, but as progress is made in school the relative position of the groups change until the difference is in favor of those at and above grade. It is to be borne in mind that it is the relative and not the absolute position of these curves that is significant. At first those below

* See Report of Committee on Child Study and Pedagogical Investigation.—Report of Chicago Board of Education for 1899-1900. (In press.)

grade have better eyesight, while beyond age ten the more advanced have the better vision. Why the change? On chart No. 1 it was seen that during the early years of school there is an increase in the number of defective pupils. It would follow, then, that during these first years those pupils who had been in school the longest would tend to have the poorest sight. Before eight years old a large majority of the pupils are in the first grade, and there is no group "below grade."

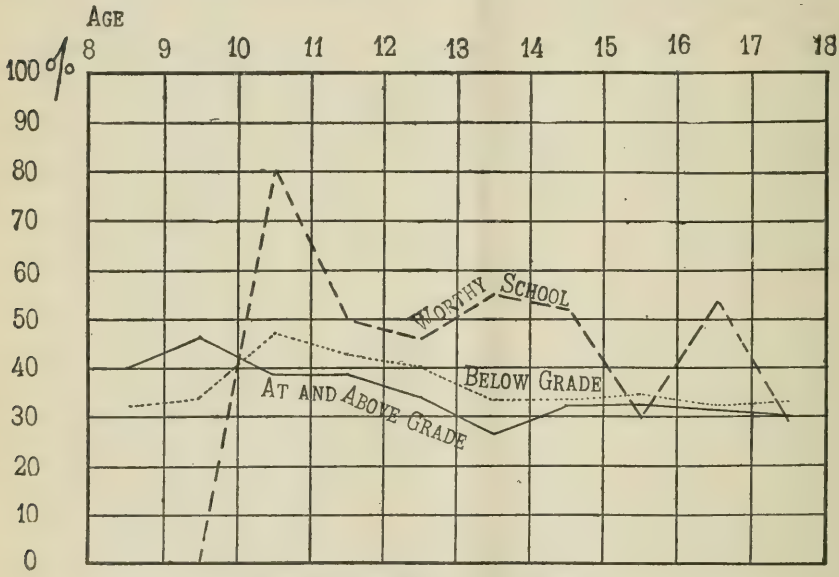

Chart 11, based on data in Table 11.

In the lower classes many of the pupils marked below grade are there because they have not entered school until somewhat past legal age, but in the middle and upper grades most of those marked below grade have been unable to keep pace with their classes. The reason for this difference is that in the lower grades advancement in class is much more a matter of the length of time the pupil has attended school than in the upper grades, both on account of the greater difficulty of testing and grading younger children and because the cumulative effects of the slighter drawbacks have not had time to show themselves. The better eyesight of those below grade up to age ten (as shown by the curves) is probably due to the fact that they have been in school a shorter time. This is in its turn a proof that the school work or conditions during these years are hurtful to the eyesight. By

the tenth year the bad effects of this early strain have spent themselves and the sifting process has also begun to make an impression, and those below grade lose their advantage, and from this age on show a greater per cent of defectives at each age. It would seem, then, that those having made the most advance in school have suffered less on the average from eye defects; or, reversing the statement, those with the best eyes have, other things being equal, a better chance in school work.

A large majority of eye defects consist of irregularities in the shape of the eye, and are not diseased conditions. Many of them do not affect the general health to any great extent, and while the child may be somewhat hampered in school work, his power of assimilating knowledge and the ambition and desire to attain it are not diminished as in cases of ill health or pathological conditions. For this reason poor eyesight is not so positive a factor in preventing the child's school advancement as might be supposed. The child is a complex being, and sensory defects are only one of the many causes for backwardness in school work. When all these other causes are disregarded and defective vision alone considered it seems somewhat remarkable that the result should be so striking as it is.

The fact that subnormal vision has only a slight effect upon the child's immediate ability to do good school work is no excuse whatever for neglecting the testing of the eyes of school children; indeed, it is a strong argument in its favor for causing, as they do very often, little immediate pain or inconvenience, these troubles are allowed to continue with no attention until serious consequences result. Therefore, it would seem that the principal or teacher of either high school or grammar grade who, in the face of such facts, refuses to test the eyes of his pupils through lack of time, has not yet seen the full round of educational possibilities in that he so worships the god of knowledge that he is willing to risk physical incapability in a few of his pupils and great discomfort to many others in order to have a few more minutes in which to cram their heads with facts.

Since defective vision besides its inconvenience is also one of the factors productive of mental backwardness, any cause of increase or decrease in visual acuity is of prime importance. Some of the possible causes in connection with school work and life have already been mentioned; many causes incident to life outside of school cannot be reached at present. In this connection appears the importance of the third

problem, "The relation between the general physical condition of the individual and sight."

The more the brain is studied the more wonderful appear the manifold co-ordinations of the different parts of the body. No sensation, no thought, no action or feeling however slight can take place without each part of the body being more or less affected by the radiation of nervous energy. In no organ does this produce more distinct results than in the visual tracts. The serious effect on the sight of many children's diseases (as measles) are well known, but few realize the marked manner in which the visual acuity of many eyes varies with changing health.

The period of the greatest physical change throughout the life of any individual is during the years of early adolescence. Although the growth and development of this period begins and ends earlier in girls than in boys, the process and effects are much the same. Not that the sexes grow more alike—on the contrary, it is here that the great differences appear—but in both it is a time of rapid growth and development and of great change along all lines. The enlarging digestive organs furnish more and better nutriment. The growing heart and vessels give more blood, richer in red corpuscles, to tissues which, on account of the rapid metabolism going on, demand all they can get. The death rate at this age is lower than before, or after, as is shown by the tables of mortality. The old tables compiled by Dr. Farr from the census taken in England forty years ago give the age of fourteen as that of lowest mortality, while the tables of the Prudential Life Insurance Company, also from English sources (1881-1890), give eleven and twelve as showing the lowest death rate, and in this they agree with the tables published by the Massachusetts State Board of Health.*

Understanding these facts, it is scarcely necessary to state that the approaching good health during this period seems sufficient to account for the decrease in eye defects which appear in the second part of the first curve of Chart No. 1. An average decrease of 3 per cent a year and a total decrease of 13 per cent in less than five years is an astonishing improvement when we realize that the effects of school work and the chances of accident and disease incident to life in general must be overcome.

These compilations were made with no thought of there being any

* For full statement of these tables see "*Journal of Adolescence*," Vol. I, No. II.—A. H. Voder, Editor, Oak Park, Ill.

sex difference in eyesight, but on separating the sexes it was found that the girls showed an average of 37 per cent defective as against the boys' 32 per cent and a general average of 35 per cent. Up to date no reason for this difference has been suggested except that the freer, more active, out-of-door life of the boys may bring their average of general physical condition above that of the girls.

Since good general health appears to have a good effect on the eyesight, is is reasonable to suppose that poor health would have an opposite effect. For illustration, there is a class of children who were examined during last year who will serve to illustrate this point.

In connection with the Bridewell of Chicago is a school for boys under sixteen, convicted of petty crimes. These boys are recruited largely from indigent, many from pauper, families, unfortunate and untaught rather than criminal. Two hundred and eighty-four inmates of this school, ranging in age from nine to seventeen years, were carefully tested, the records compiled separately and the results compared with the normals secured from the other children.

The following table gives a tabulated percentage of the results:

Age	No. examined at the John Worthy School	Net Height.	Height Sitting.	Weight.	Work on Ergograph.	Strength of Grip of the Right Hand.	Strength of Grip of the Left Hand.	Lung Capacity.
9	2	101.79%	100.77%	105.28%	70.03%	92.59%	94.56%	108.13%
10	10	97.97 "	99.57 "	101.63 "	84.51 "	86.31 "	89.43 "	100.81 "
11	24	97.45 "	98.07 "	96.95 "	79.15 "	91.27 "	91.88 "	94.11 "
12	54	97.19 "	98.52 "	97.47 "	79.04 "	84.37 "	88.92 "	99.85 "
13	47	96.44 "	97.04 "	95.26 "	82.01 "	84.61 "	86.21 "	93.40 "
14	65	94.32 "	95.65 "	87.72 "	70 78 "	73.93 "	78.20 "	87.16 "
15	51	94.04 "	92.47 "	87.60 "	68.00 "	70.57 "	72.74 "	84.21 "
16	24	92.19 "	91.27 "	81.69 "	62.64 "	66.19 "	70.24 "	75 14 "
17	7	93.07 "	91.91 "	81.15 "	64.92 "	66.39 "	73.53 "	77.03 "

Table III. Per cent which the averages from boys of John Worthy School are of the averages of normal boys.

This table compares the boys of the prison school with the normal boys of the same ages for most of the tests and measurements, e. g., the average height of the 17-year-old boys in the John Worthy School is only 93.07 per cent of the average 17-year-old boy's height.

These comparisons bear eloquent testimony to the poor physical condition of these unfortunates. The illiteracy of their class precludes

any eye strain through too much reading; they are not famous for overwork in school; no confining work injured their eyes, for the fact that they are in prison at this age shows that they have been upon the streets and beyond control of school or home.

Few or none of the causes usually given for poor eyesight appear in these boys' lives, yet 48 per cent of them, against 28 per cent of the normal boys of the same ages, showed defective vision.

The curve formed by the broken line in Chart No. 2 shows how they compare with the dull and bright pupils. Does it not seem probable that this visual discrepancy might be accounted for as a direct result of bad physical condition?

The converse of this proposition is equally important, as many nervous troubles, headaches and even more serious affections, are caused, or at least greatly aggravated, by the strains coming from the use of defective eyes. It is entirely possible that some of the boys of the prison school were there on account of eye strains. The unaccustomed application to books and school work made disagreeable, if not actually painful, by poor eyesight, makes a discomfort that the child cannot define, and shows itself in lack of attention and finally in ill temper. Punishment following, the boy, unrestrained at home, leaves school for the street, and idleness and bad company do the rest.

An interesting case showing the effects of these eyestrains is that of a son of one of the principals of the Chicago schools. In kindergarten and first grade he was restless, easily tired, and so irritable by the close of the day that parents and teachers were annoyed and puzzled. Though naturally a nervous child, he had never shown chronic ill-temper before. His mother had her eyes examined and glasses fitted, and experienced so much relief that merely as an experiment the boy was taken to an oculist. Glasses correcting the marked astigmatism in otherwise normal eyes solved the difficulty. What would have been the result had he been the child of poor and heedless parents?

Sight is not some mechanical device that can be studied by itself. It is a part or function of a delicately adjusted organism, and to be understood must be seen in its life relations. So complicated are these relations even in the life of a child that it often seems impossible to trace them. The subject has barely been opened.

In order to make the statements in this paper as clear and concise as possible, they have been made as if the work had been conclusive

and final, a bit of affectation and conceit of which Chicago's Child Study Department hopes never to be accused. Many of the conclusions are tentative, but are given for what they may be worth as suggestions. The facts here presented are based on careful work, and it is asked only that they be given due weight. They will have to stand for the truth, as we see it, until disproved or materially modified by some more extended investigations.

Ophthalmological Aspects of Pregnancy.—Dr. Casey A. Wood pointed out that the most important condition for which the ophthalmologist is consulted is difficulty of accommodation, namely, difficulty in reading, in writing, in doing near work generally. Muscular conditions in the eye are different during pregnancy from those before and after it, and they do not differ from muscular difficulties observed in the body elsewhere. A primipara not infrequently requires the aid of glasses in reading or doing near work, but after pregnancy has been completed she can dispense with them. Pigmentation of the eyelids is not infrequently seen in pregnancy, which is merely a part of the pigmentation. Cases of well-marked blindness, and even of complete blindness, have been observed and reported as one of the outcomes of gestation. Violent and long-continued vomiting produces small hemorrhages into parts of the eye, and sometimes serious results follow. Detachment of the retina is not a very uncommon condition in pregnancy. Retinitis albuminurica frequently accompanies pregnancy, but the disease of the retina shows itself in a more favorable form in pregnancy than it does in the ordinary forms of Bright's disease. The prognosis is not as grave in pregnancy from albuminuric retinitis as it is in chronic Bright's disease, although the conditions are about the same. Temporary amblyopia of uremia, with or without albuminuric retinitis, was referred to. Occasionally a patient who is pregnant, whether albuminuria be recognized or not, has temporary or even complete blindness, which may last from a few hours to a few days. These patients almost invariably get well. Nothing pathological can be seen in the fundus by the ophthalmoscope.—*Chi. Academ. of Med.*

GONORRHEAL OPHTHALMIA WITH COMPLICATIONS. REPORT OF CASES.*

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In quite a number of cases of gonorrheal ophthalmia in the adult that have been seen by me in my practice during the past ten years, several have been attended with complications that have proven interesting to me at least, if not to the patient. The treatment adopted, with its results, has proven instructive in pointing out not only the necessity for constant and thorough attention, but the evils attending some remedial measures that seemingly have the indorsement of men of recognized authority. Viewed in various lights, the four cases which I desire to briefly report this evening may be of interest.

Case 1.—F. G., aged 19, in excellent physical condition, presented himself at my office on February 19, 1895, with a history of beginning inflammation of the right eye three days previously, and the left eye 24 hours later. The lids of the right eye were found red and very much swollen, the ocular conjunctiva infiltrated and bathed with a purulent discharge, the cornea steamy in appearance and perforated near the limbus in the upper quadrant, with moderate prolapse of iris and an abundance of thick, stringy pus in the anterior chamber.

The left eye, the last one to become infected, presented a similar appearance, with the one exception, that the cornea was not affected. The patient admitted having gonorrhea at the time, and a microscopical examination of the secretion from the eye verified the diagnosis of gonorrheal ophthalmia.

The patient was placed in the hospital, the outer canthus of each eye divided, and the nurses instructed to thoroughly flush each eye every fifteen minutes with a warm saturated solution of boracic acid, and this was supplemented by applications of a 2 per cent solution of nitrate of silver to the conjunctiva morning and night. Inside of 24 hours the pain in the right eye from panophthalmitis became so severe that an enucleation was performed, but with considerable difficulty, owing to the great infiltration of the orbital tissues. Following the

* Presented at the Annual Meeting of the Chicago Ophthalmological Society, Jan. 8, 1901.
For discussion see page 199.

operation, the orbit was freely and frequently flushed with a 1 to 3,000 solution of bichloride of mercury. The lids remained swollen and the orbital tissues infiltrated for four or five days, but with no other complication.

The inflammation in the left eye continued to increase in severity until the eye presented a condition which warranted grave fears as to the possibility of saving the eye. The cornea, however, remained intact and the incision at the outer canthus was increased in order to lessen all pressure, the chemotic conjunctival tissues were freely scarified, and constant and thorough cleansing maintained night and day. Nitrate of silver solutions, in the strength of 10 to 30 grains to the ounce, were carefully applied to the conjunctiva once or twice daily. At the end of four weeks of tedious treatment the eye was considered out of danger, and three weeks later the patient was discharged.

Success in saving the left eye from the ravages of such a virulent infection was attributed to the early free division of the outer canthus, with continued efforts to prevent pressure upon the cornea, great care in preventing the slightest abrasion of the cornea by instruments or unskillful methods of examination, and the constant and frequent cleansing.

The more serious complications and consequences arising from gonorrheal ophthalmia are recorded in the history of the following two cases:

Case 2.—L. M., age 34, was referred to me January 14, 1898, with a history of inflammation in the right eye, beginning one week previously as a result of a cinder getting into the eye, the cinder having been removed and the eye treated by a very competent general practitioner.

The eye, which had assumed a very painful condition, presented all of the classical symptoms of a gonorrheal inflammation. The cornea was found perforated, and infiltrated throughout almost its entire extent, with prolapse of iris and the anterior chamber filled with pus.

The patient suffered so extremely that enucleation was decided upon. The operation was performed under general anesthesia in the usual manner, but with some difficulty, owing to the infiltration of the orbital tissues. The orbit was thoroughly flushed with a 1-2000 bichloride solution and provision made for drainage.

On the following day the eye appeared worse than before, in that the swelling was greater, the lids being dense, shiny and dusky in appearance. The patient complained of severe pain in the orbit and

vertex of the head; temperature 100 degrees and pulse 68. Hot bichloride fomentations constantly applied; purgations by calomel and salines.

On the third day following the operation, or on January 17, the appearance of the orbital tissues was but little changed; temperature 102 degrees and pulse 60. The patient complained of severe headache and dizziness, and was occasionally delirious. Under ether the outer canthus was divided more extensively than at the first operation, and free incisions were carried through the orbital tissues to the apex of the orbit in the vertical and horizontal meridians. But little hemorrhage followed these incisions, and no pus was discovered. Bichloride of mercury solution in strength of 1-1,000 was freely syringed to the bottom of the wounds, and a weaker solution employed for frequent flushings as subsequent treatment.

On the following day the temperature was 100 and pulse 68; the patient was not delirious and suffered but little from headache. The recovery from this day was uninterrupted, and the patient was discharged from the hospital at the end of three weeks.

The left eye was not infected, but a Buller's shield was applied at the first visit as a protective measure. The diagnosis of gonorrheal ophthalmitis was verified by microscopical examination of the discharges.

Case 3.—J. M., age 56, was referred to me March 18, 1900. The patient had lost the left eye ten years before as a result of being struck in the eye by a piece of steel, the injury necessitating enucleation. Upon presenting himself to me a history of purulent inflammation of the right eye, beginning one week previously, was obtained. Examination disclosed intense oedema of the lids, marked chemosis of the ocular conjunctiva, extensive perforation of the cornea, with prolapse of iris, the lens and an accumulation of pus also presenting at the corneal opening. Vision was reduced to light perception only, and the patient complained of severe pain in the eyeball and throughout the entire right side of the head. No history of gonorrheal infection could be obtained, but a microscopical examination of the secretion from the eye completed the diagnosis of gonorrheal ophthalmitis.

Under general anesthesia the outer canthus was divided, free scarification of the infiltrated conjunctiva made, and hot bichloride flushings instituted in the hope of staying the progress of the infection, and perhaps saving something in the way of vision in the only eye that the

unfortunate victim possessed. It was thought best not to disturb the dislocated lens until a more favorable opportunity, if such opportunity should present itself.

On the following day, March 19, the orbital tissues were greatly distended, the eyeball was tense and presented a mass of purulent infiltration that had but little resemblance to an eyeball. The patient had a pale, anxious look, suffered from very severe headache, the pain radiating from the eye over nearly the whole of the right side of the head. The temperature was 101 and pulse 120.

Under general anesthesia enucleation was performed with considerable difficulty, as might be expected, owing to extensive infiltration of the tissues. The orbit was freely cleansed with a hot bichloride solution in the strength of 1-2,000, and provision made for drainage.

Twenty-four hours later the orbital tissues were more distended than ever before, and the patient complained of severe headache, dizziness and nausea, though the latter was attributed to the anesthetic. An artificial leech was applied to the temple and two ounces of blood withdrawn.

Six hours later, there being no perceptible improvement, the patient was given a general anesthetic and the division of the outer canthus extended and the orbital tissues freely incised to the bone in the vertical and horizontal meridians. But little hemorrhage followed these incisions and no pus was discovered. The patient passed a fairly comfortable night, and on the following morning, March 20, was comparatively free from pain, and expressed himself as feeling very much better. He also, for the first time in several days, expressed a desire for food.

Within 48 hours, however, or on the morning of March 22, the patient presented a condition worse than ever, with orbital tissues very greatly extended, the swollen eyelids being tense, shiny and of a brawny color. The slight discharge was thin and serous in character. Temperature 103 and pulse 50; patient delirious and making efforts to vomit.

Recognizing the necessity for heroic measures, the patient was again placed under general anesthesia and an incision made directly through both lids, in the meridian line, and carried to the bone throughout the extent of the orbit, and this was followed by a number of intersecting incisions throughout the orbital tissues, making a veritable mince-meat of the mass. But a moderate amount of hemorrhage followed the inci-

sions, though a few drops of pus followed one of the incisions deep in the apex of the orbit. A hard rubber syringe loaded with 1-1,000 bichloride of mercury solution was carried to the apex of the orbit, and the solution injected freely to the bottom of the incisions in the orbital cavity. A weaker solution was ordered for frequent cleansing of the orbital tissues. The patient had previously been given bromide of potassium internally.

Three hours after the operation the temperature was 102 and pulse 55. Twenty-four hours later, or on March 23, the swelling was less intense and the patient quieter, but still delirious. Forty-eight hours later, or on March 25, the temperature was 100, pulse 65, and patient rational. He still complained of slight headache. For one week following this the temperature was slightly elevated, with moderate fluctuations of the pulse. The hot antiseptic irrigations were continued for ten days, during which time the infiltration of the orbital tissues gradually disappeared. The patient was discharged from the hospital April 20.

Case 4.—C. D., age 31, presented himself on October 28, 1900, with all of the symptoms of purulent panophthalmitis in the right eye, and a beginning purulent conjunctivitis in the left eye from an already microscopically diagnosed gonorrheal infection. An evisceration of the right eye was performed and antiseptic irrigations of the left eye every fifteen minutes instituted, supplemented by instillations of mercurial solution. The inflammatory process continued for ten days, growing less each day, and finally ceased altogether. Just what influence the mercurial solution exerted is unknown.

These few cases fairly illustrate the point which I wish to emphasize. Given a case of gonorrheal ophthalmitis, the diagnosis of which has been verified by microscopical examination of the secretion, the first thing to be done, if the oedema of the lids is marked, is to divide the outer canthus to prevent pressure on the cornea. The next thing is thorough flushing with antiseptic solutions to keep the parts free from infective material. The flushings, as they are ordinarily performed, are not sufficient, and I therefore insist upon having a relay of nurses and thorough washing of the infected eye every fifteen minutes, night and day. In no other way can the eye be kept free from purulent discharges, which accumulate with striking rapidity. A skilled nurse will carry out these fifteen-minute flushings without thoroughly arousing the patient if he is asleep, and particularly so if he has previously been

given a moderate dose of some opiate. The nurses are especially cautioned not to touch the cornea with anything, for fear of producing an abrasion and thus making it possible for introduction of infection. If panophthalmitis has set in, evisceration is always preferred to enucleation, owing to the danger of meningitis, as in the two cases reported. While I have not hesitated in the past, on numerous occasions, to enucleate an eye affected by panophthalmitis, and while many good authorities uphold the practice, I must condemn such a procedure as wholly unjustified, except in very rare cases, and attended with unnecessary risk.

Dr. Thomas McDavitt, of St. Paul, is home from Cuba. Dr. McDavitt and Dr. McGaughey, of Winona, were the only Minnesota physicians at the Pan-American Medical Congress.

On a New Method in the Discission of Soft Cataracts.—Percy Dunn.—This writer advises in the treatment of soft cataracts by discission to avoid increased tension by draining away the aqueous before withdrawing the needle. It is reasonable, he says, to conclude that the condition of the lens after the needling would determine the degree of restored tension. With a swollen lens the aqueous would probably only be resecreted to the amount needful to restore the normal tension, and he does not think it possible to conceive that the glaucomatous symptoms could arise under these circumstances. Another advantage of the method is the possibility of freely breaking up the lens, and still another, the rapid absorption of the soft lens matter. A lowered tension implies a more rapid circulation of fluid through the eye, and is exactly the condition of affairs to the most desired-for rapid absorption. He reports a case in which he carried out these methods with the best results. The only possible ontoward complication that could ensue is that of iritis originating from mechanical irritation caused by the presence of broken-up lens matter, but the doctrine that mechanical irritation per se can excite inflammation anywhere in the tissues is not one which at the present day receives support of scientific testimony. In senile cataract no difficulty is experienced in obtaining a fairly rapid absorption of the lental debris, which it has been found impossible to remove after extraction of the lens, a result which, he thinks, is chiefly due to lowered tension in the eye, caused by the necessary steps of the operation in this case.—*London Lancet.*

A CASE OF NON-COMITANT RIBBON-LIKE KERATITIS, WITH REMARKS.

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ILLUSTRATED.

Indefinite subclassification and division tends to confuse and demands increased effort in study. It is, therefore, reprehensible, unless it serves a purpose. Differences in pathology always justify grouping, for they add to actual knowledge, but if successful treatment is more readily secured then etiological differences and even varying degrees of intensity of the same disease process may be admissible as causes of subdivision. We regret to note, however, almost a mania for classification whose practical purposes we fail to grasp. For that reason we timidly leave to our readers to accept or condemn the term "non-comitant."

Ribbon-like keratitis appears, especially in younger adults, in eyes which are, or have been, the seat of severe intra-ocular affections. It also comes, mostly in advanced age, as a corneal lesion alone. This latter variety has been called primary, the former secondary. Non-comitant (without companion) I would apply to the cases where no other lesions are ascertainable; concomitant (accompanying) to those springing up with or after destructive intra-ocular lesions.

Mrs. K., of DeKalb, Mo., nearly 70 years old, but remarkably well preserved for her age, consulted me for eye trouble in the fall of 1899.

O. S. V. $= \frac{20}{40}$, with + 2 Dsph $= \frac{20}{30}$.

O. D. V. = recognizes shadow of fingers directly in front of her; eccentric sight from below seems a little sharper.

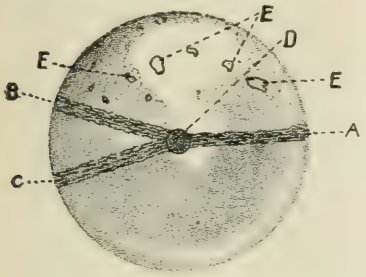
No history of eye disease in herself or family; no pain, merely gradual loss of sight by a growth on the cornea. Tone of eyes normal. Iris reaction on convergence and light all right; mydriatic dilatation quite complete for her age; size of pupil quite small, invisible beneath growth in right eye. The seat of the growths is shown in the two cuts.

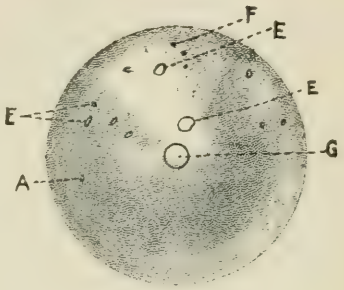
The pathological changes on the cornea were of three kinds:

1. Band-like films in a horizontal sense.

2. Isolated whitish spots from the size of a pinhead to 2 mm. in diameter.

3. A peripheral loss of transparency reaching from the limbus 4 mm. centerward. It is easily distinguished from an arcus senilis by (a) the absence of a transparency between it and the limbus (b), its bluish white tint (c), a muddy brown discoloration in the clear space peripheral to a gerontoxon.





The band-like films were most marked in the right eye, showing two diverging branches toward the outer canthus, the lower slightly down, the upper at about 30° outward and up. These two branches coalesced near the pupil, hence a similar ribbon-like opacity started straight toward the inner canthus. These blemishes caused very great disfiguration. Their description is best given by comparison. They appeared like the shiny tracks of a snail (slug), only more dull and dryish. An old atrophic pterygium, too, might suggest similarity. Their outline against the unaffected cornea was sharply cut; a steel instrument gritted against them; they were immovably bound down; they possessed a dulled-glass translucency, but did not permit a view of the iris behind them. Over the pupil, which corresponded nearly to the junction point of the three band-like opacities, there was a speck of a dirty, rust-colored deposit about the size of the phosphorus head of an ordinary match. The surface of the bands was hard and anaesthetic and raised above the general level. Microscopic examination showed the presence of lime salts below a desiccated mass of hypertrophic epithelium. Concentrated KOH solution brought about the separation of cells much resembling the scrapings of nail tissue, after the latter is heated in the KOH solution. Bowman's membrane was replaced by a dense connective tissue whose transition into the parenchyma could not be distinguished in one flake tearing deeply into the latter.

The whitish spots, the largest of which was beginning to encroach upon the left pupil from above, were of a faintly bluish cast and round-

ish, except where several smaller ones were on the point of coalescence. Their outline was well defined, their structure mound-like; a very small drop of the finest translucent candle wax let fall upon the cornea would produce a very close resemblance. They were opalescent and did not allow sight of the iris behind them. While quite consistent, they did not show the least grittiness on touch with metallic substances. A very fine and sharp cataract knife was passed well through the middle of the base of the largest one, which attempt resulted in pretty neat ablation. The corneal tissue below was then quite clear enough to allow the iris to shine through. Examination showed these nodules to be small mounds of hypertrophic epithelium, the analogues of corns, epidermic horns, etc.

I was able to convince myself also of the fact that the peripheral cloudiness was of the same process, but found it impossible to get at the nature of the brownish discoloration. There is, however, no doubt in my mind that it was due to the same process that caused the central "rust-spot" in the right eye, i. e., a necrotic disintegration of the underlying parenchyma.

The case is of interest, as it shows the disease fully developed in one eye and in active process in the other. In the earlier stages circumscribed epithelial hypertrophies only were noted, but no salt-infiltration or desiccation. Epithelial tissue depending for its nutrition (either normal or perverted) upon its basement membrane, the primary trouble must be looked for in the anterior elastic lamina. As *it,* however, is avascular and depends upon the corneal lymph circulation, it cannot be considered the ultima causa. Trophic disturbances in the front layers of the corneal parenchyma must induce the change, which view is supported by the rust-like disintegration of its structure. The grittiness of the pathological formation is due to calcareous degeneration and desiccation naturally following in the wake of degenerative processes.

Scraping of the cornea seems to me such an unsurgical procedure that I decided to peel or dissect off the bands. With a very sharp cataract knife I detached enough of the ribbon along its free margin, near the pupil, to insert a branch of an iris forceps. With the latter I began to make gentle traction, by means of which I could lift off the pathological tissue in small scales, its brittleness preventing continuous separation. In several places the scales would be adherent and tear into the parenchyma with some pulling. To prevent serious laceration in this

manner I made the blade of the knife pass over the cornea in razor fashion, thus detaching the attracted parenchyma.

I admit that in some places the work looked "coarse and lumpy," especially as I failed to dissect up small specks directly adjoining healthy tissue, but under antiseptic measures healing was prompt enough. A slight but amazing photophobia continued for some two months.

Six months after the operation the old lady showed a most gratifying result. The disfiguring "snail-tracks" were gone, the eye not sensitive to light, and there was useful sight. The old lady stated that in case of necessity this eye (the right) would, in good light, be sufficiently serviceable to allow her to move about unguided. There remained, of course, an odd filminess over the cornea from cicatrization, but it was hardly noticeable except on close scrutiny at short distances. Patient stated that the "growth had been coming on the eye" for ten or fifteen years.

The left eye, besides numerous spots (of which the larger ones are marked in the cuts) exhibited a small stub of a band forming from the inside. This was virtually like the sound spots, not gritting under steel touch, but practically anaesthetic.

The above observations would point to the inference:

1. That ribbon-like keratitis arises from trophic disturbances in the lymph spaces of the anterior layers of the parenchyma.

2. That, as a result, Bowman's membrane suffers and thus produces epithelial hypertrophy in the same manner as a low grade of irritation in a wound would produce unhealthy granulations.

3. That calcareous degeneration is an accidental result, but that desiccation being most easily effected in the line of the palpebral fissure, the typical bands would naturally appear there first.

Clinical Lectures on Syphilis.—The New York Skin and Cancer Hospital announces a course of clinical lectures on Syphilis, by members of the visiting and consulting staffs, on Wednesdays during March and April, and May 1. The lecturers are Drs. L. Duncan Bulkley, Abraham Jacobi, D. Bryson Delavan, David Webster, Edward D. Fisher, Edward G. Janeway, and Willy Meyer. These lectures are free to members of the medical profession on presentation of their professional cards.

THE DIOPTRIC POWER OF THE CORNEA: A REPLY TO DR. WEILAND'S CRITICISM.

BY W. N. SUTER, M. D.

WASHINGTON, D C.

In a recent number of the Record Dr. Carl Weiland criticises my article entitled "The Dioptric Power of the Cornea" (OPHTHAL. RECORD, April, 1900). I am unable to understand clearly Dr. Weiland's reasoning, for he admits, in the beginning, that the cornea cannot be replaced by a lens of fixed dioptric power. This is essentially the point which I wished to make clear, since much confusion and erroneous calculation have resulted from the custom of measuring the corneal refraction in diopters. I myself admitted that *for the purposes of keratometry* it is convenient to express the corneal refraction in this way, provided we do this with a clear understanding of the significance of such expression.

But Dr. Weiland continues, endeavoring to prove that, though the cornea has no fixed lens-equivalent, it yet has a fixed dioptric value. He says: "What do we call the dioptric power of a refracting surface? It is nothing but the dioptric power of a certain lens in air which under certain conditions will affect the incident rays of light in the same way as the refracting surface, and which, when given, will enable us to reconstruct the cornea." Now it was shown in my former paper that there is no lens which will affect incident light (irrespective of the point from which it proceeds) in the same way as does a single surface. Furthermore, Dr. Weiland has, in this definition, omitted an essential matter. The refractive power can be measured in diopters only by a lens which, *when placed in the same position as the surface to be measured,* would have the same effect as the surface. Parallel rays are brought to a focus by the normal cornea about 31 mm. behind the corneal summit. According to Dr. Weiland's definition, the power of the cornea is measured by a lens which would (under certain unspecified conditions) bring parallel rays to the same focus. It is apparent that an infinite number of lenses would do this, each when so placed that its principal focus lies 31 mm. behind the cornea; but only one lens can measure the power of the corneal refraction—that one which, when occupying the position of the cornea, would bring the rays to the same focus as the cornea does. This would be in this case (that is, for parallel rays) a lens of 32 D.*

* We assume here and throughout this article that the radius of the cornea is 7.8 mm. in length. Let it be remembered also that the dioptric equivalence applies only to the focusing power, not to the size of images.

From the foregoing it is clear that Tscherning's device of placing the lens at the center of the corneal curvature does not furnish a solution of the matter. Such a lens, not occupying the position of the cornea, cannot be regarded as in any sense measuring the power of the corneal refraction. This point, however, might be disregarded if a lens in such position would really be equivalent in refractive action to the cornea; but it is no more so than is a lens occupying the position of the cornea. In each case a suitable lens would bring parallel rays to the same focus as the cornea, but *only parallel rays*. Let us take a single illustration: In myopia of 10 D., in order that light may be focused on the retina, rays must meet the cornea as if coming from a point 100 mm. distant. Then for the corneal refraction we should have the equation, $10+\frac{1.337}{f'}=43$, or $f'=40.5$ mm. That is to say, in the corneal refraction (without the aid of the crystalline lens) the rays would be focused at a point 40.5 mm. behind the cornea. To find the dioptric power of the lens, which, when placed at the center of curvature, would bring the rays to this focus, we must make use of the equation for lens-refraction, $\frac{1}{f}+\frac{1}{f'}=\frac{1}{F}$. In this case $f=100+7.8$ (7.8 mm. being the corneal radius)$=107.8$, and $f'=40.5-7.8=32.7$. Making these substitutions, we derive $\frac{1}{F}=39+D$. Hence in myopia of 10 D. the corneal refraction would be replaced by a lens of 39 D. (the lens being placed at the corneal center), whereas *for the same cornea* the lens-equivalent for distant rays is 43 D.

"But," says Dr. Weiland, "one may look at this question from another standpoint." He then proceeds to say that if we cut from the cornea a thin plano-convex lens we may take this lens as the measure of the cornea. Here he *begs the question.* He *assumes* that this lens measures the corneal refraction. The same objection applies to the plano-convex as to any other form of lens. Dr. Weiland apparently overlooks the fact that the plane surface of a lens refracts rays except when these are perpendicular to this surface. For rays which proceed from the anterior focus such a lens as Dr. Weiland describes (43 D.) would have the same action as the cornea; but for all other rays, their action would differ, because in the cornea there is only one refraction, while in a plano-convex lens made by a section of the cornea there is also the refraction which would take place on the emergence of the rays from the posterior face of the lens into air. *In fact, Dr. Weiland*

could not possibly have selected a more appropriate illustration to disprove what he wishes to prove.

Finally, the criticism is made that my demonstration relative to the cylindrical correction of corneal astigmatism is conclusive only in aphakia. In my paper I did not aim at a demonstration of this matter; but I must acknowledge that I left too much to be inferred by the reader. However, the mathematical demonstration given by Dr. Weiland is unnecessary. It suffices to say that in keratometry we disregard altogether the action of the crystalline lens. Having placed before the cornea such a cylindrical lens as renders pencils homocentric after the corneal refraction, they must remain homocentric, no matter what spherical lens (as the crystalline) they traverse *after* (but not before) they have undergone refraction by the cornea.

Tubercles in the Optic Thalmus and in the Cerebellum.—Louis Spillmann and L. Nilus report a case of this nature. The patient was a seamstress, aged seventeen years. The principal symptoms were intense headache, absolute blindness, vomiting, Jacksonian epilepsy, with a pulse regular and rather rapid. Disturbances of memory or of the association of ideas was never noticed, neither were there any anomalies of sensation or motion. Intelligence was not dulled till the very last days of life; coma supervened without convulsive phenomena. At autopsy about a dozen small tubercles the size of a pea were found. They were seen in the middle of the right hippocampus. The optic thalmus on the left side was invested by a tubercle the size of an almond. The cerebellum was filled with tubercles, there being three in the right side and four in the left. Tubercles situated in the gray matter of the brain, in the optic thalmus, and in the white matter of the cerebellum of this patient did not give rise to any characteristic symptom; the symptoms observed were those commonly encountered in many cerebral affections. On this account there was difficulty in determining the exact seat of the tumor during life.—*Gazette Hebdomadaire,* December 16, 1900.

THE

OPHTHALMIC RECORD

A MONTHLY REVIEW OF THE PROGRESS OF OPHTHALMOLOGY.

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THE TREATMENT OF DETACHMENT OF THE RETINA.

When one considers the numerous—almost innumerable—forms of treatment, many of them operative, brought forward from time to time, for the alleviation and cure of retinal detachment, and the surprising results said to have been accomplished by each, one is inclined to ask whether there is any measure permanently effective in the average instance.

Last year Stärkle, in his (Basel) Inaugural Thesis, gives an account of the treatment of twenty-three comparatively recent cases of the disease by subconjunctival injections of salt solution. In ten cases there was a marked improvement, with complete restoration of the detached membrane in three. In nearly all (21) improvement of vision set in; in seventeen there was enlargement of the field of vision. As might have been expected, the more recent the detachment the more marked was the improvement. The operator began usually with a weak (2 per cent) solution, but finally employed a four and even a ten per cent solution. In many instances the last strength seemed the most effective. The author thinks that the exosmosis and endosmosis set up by the salt solution reduces the amount of the subretinal fluid without decreasing the vitreous mass, thus permitting the retina to resume its normal position. There is, at least, one consideration not to be lost sight of in this connection. In choosing a form of treatment for detachment of the retina, this plan has the advantage of being without risk—which cannot be claimed for procedures like the Schoeler and Deutschmann methods.

CASEY A. WOOD.

In this issue we publish a very interesting and practical article on some of the results of the eye tests in the Chicago Public Schools, by Chas. C. Krauskopf, who has had practical supervision of these tests, under the direction of the Child Study Department of the Chicago Public Schools. This article is interesting, as it deals with the subject from the standpoint of an intelligent public school layman, and furnishes many valuable ideas and suggestions, together with significant tables and charts.

REPORTS OF SOCIETIES.

WILLS' HOSPITAL OPHTHALMIC SOCIETY,

Philadelphia, Pa.

Meeting 11th of March, 1901, Dr. S. D. Risley in the chair.

Dr. Frank Fisher presented a case of *sympathetic ophthalmitis* coming on after a panophthalmitis which had followed a cataract extraction, the patient being sixty-four years of age. He laid especial stress on the age at which the ophthalmitis had developed and the long period of time elapsing between the condition and the cataract extraction.

Dr. William Zentmayer inquired whether it is not rare for the disease to evidence itself in cases in which there is panophthalmitis. In answer to Dr. John T. Krall's question whether the fundus of the sympathizing eye had been examined, Dr. Fisher stated that when he saw the case the eyeground had become invisible. Dr. Risley asked whether subconjunctival injections of solutions of chloride of sodium had ever been tried by any of the members of the staff. Dr. Walter L. Pyle believed that the occurrence of sympathetic inflammation after panophthalmitis depended upon the amount of destruction of the globe. He believed that if there was scleral rupture and escape of most of intraocular contents sympathetic ophthalmitis was not likely to follow. Dr. Charles A. Oliver had found that all attempts to do useful iridectomy in such cases were futile, the iris-tissue being brittle and friable; while any obtained good results are rapidly lost. He had been successful in several instances by either the Critchett-Story operation or Tyrrell's method of drilling. He had never employed subconjunctival injections to any advantage nor as yet had made use of large doses of the alkalies, but thought if lymph formation and circulation are good the former method might be of assistance.

Dr. George C. Harlan presented a *case of false maculae.* The patient, a white man of twenty-three years of age, whose family and personal histories were negative, had squinted since childhood. He could use either eye. On the twenty-third of February, 1900, he was admitted to the hospital with an esotropia of forty degrees preferably

fixing with the left eye. A tenotomy of the right internal rectus muscle with an advancement of the corresponding external rectus was done, leaving a residual squint of about ten degrees. Two weeks later similar operations were performed on the left eye, with the result of an over-correction of ten degrees. On the twenty-third of January of this year he perimeter showed ten degrees of esotropia. Maddox rod gave twenty degrees of crossed diplopia. At this time a tenotomy of the right external rectus muscle was done, allowing both eyes to fix centrally, but the crossed diplopia remained the same. One week later it was found that the esotropia of ten degrees still persisted. There was not any monocular polyopia. During fixation with both eyes a crossed diplopia of between eight and sixteen degrees with a hypophoria of one-half to ten degrees could be determined.

Dr. Zentmayer made mention of a case of divergent squint with homonymous diplopia occurring in a bright student. Dr. Risley stated that it was not infrequent to find diplopia after the correction of a divergent squint. He reported a case of cataract extraction on an amblyopic convergent eye in which vision after the operation equaled six-twelfths of normal. A later operation upon the fellow previously fixing eye in which vision was brought to more nearly normal resulted in the patient afterwards having diplopia. Dr. Fisher reported a case in which a patient with marked divergence could at will associate the images of the two eyes and dislodge them to his greater comfort. Dr. Oliver gave the details of a case of marked esotropia in early life with want of binocular fusion that, through operative interference and want of proper correcting lenses, was transferred in early adult life into a case of pronounced though comfortable divergence with good vision in each eye. Recently, for cosmetic purposes, a colleague had so successfully attempted to bring about a parallelism in the two organs that a most troublesome series of diplopias took place, necessitating an operation to restore the originally induced condition of comfortable divergence. Dr. Berens mentioned neuromuscular memory as being one of the factors in this type of cases, and desired to see careful studies from the psychologist made.

Dr. Berens presented a case of successful *extraction of a foreign body from the vitreous chamber* with a resultant vision of six-ninths of normal. The patient, a thirty-eight year old man, came to the hospital on the twelfth of February, 1901, with the history of having been struck in the left eye one hour previously by a chipping from a hammer. The

external wound, which was vertical and three millimeters in size, was situated in the cornea five millimeters' distance from the nasal limbus. There was a corresponding wound in the iris. The pupil was four millimeters in size, and central, and the iris reacted well. Under atropine the pupil enlarged to eight millimeters. There were numerous vitreous opacities anteriorly, and some posteriorly. The details of the eyeground were slightly veiled. Far down and to the inside two semilunar areas, one of which at first showed a suspiciously bright point, could be seen. Under Dr. Berens' guidance, the senior resident surgeon enlarged the corneal wound down and in, did an iridectomy, and placed a magnet tip towards the side of the retinal laceration. Three unsuccessful attempts being made in this direction, Dr. Berens took the tip and inserted it twice, the second time down and out, recovering a piece of steel from that locality. Atropine was instilled and a bandage was applied. On the next day there was slight reaction, but there was not any pain. Two days later there was a moderate injection. At this time the patient could tell time on a watch at one-half meter's distance. In eight days' time the eye was quiet, and vision equaled six-twentieths of normal. The eyeground could be distinctly seen. Four days after this vision had arisen to six-ninths of normal, and the eye was quiet.

Dr. Oliver exhibited a case of *double coloboma of the iris, chorioid and optic nerve with unusually small cornea* in a sixteen year old Italian girl. As far as could be ascertained there was not any history of inheritance, nor were there any other signs of congenital malformation present. The colobomata were in their usual positions, downwards and slightly inwards, those of the right eye being the larger. The characteristic curvilinear extension of the retinal vessels along the borders of the colobomatous areas could be plainly seen. The surfaces of the fundus colobomata, which were on a much deeper level than the rest of the eyegrounds, were quite ectatic in places. Refraction in the uninvolved macular regions was myopic and slightly astigmatic. Corrected vision equaled about two-thirds of normal. The visual fields showed defects corresponding with the fundus abnormalities. Both optic nerve heads were considerably enlarged. The retinae in the colobomatous areas were visible as thin, almost transparent, membranes, over and in which a few small vessels could be traced.

The case was particularly interesting in the fact that in spite of the apparent microphthalmus the eyeballs were enormously lengthened

in their anteroposterior diameters, giving high degrees of myopic refraction.

Dr. Oliver also showed a patient from whom a *chip of iron had been spontaneously extruded from the eyeball* two years after its entrance into the crystalline lens through the cornea and the iris. No reaction followed the expulsion of the foreign body. The lens itself had been studded with brilliant cholesterine crystals for more than a year's time.

Dr. Berens presented a case showing the recent effects of a *plastic operation for symblepharon* in which the conjunctiva of the upper lid had been adherent to the cornea over more than two-thirds of its surface, entire freedom of motion being restored to the globe.

Dr. Oliver gave a brief account of a case of *interstitial keratitis* occurring in the left eye of a twenty-four year old man, suffering from other stigmata of hereditary syphilis. He had treated and cured the patient's right eye for a similar attack of keratitis some six months previously. The point of interest in the case consisted in the fact that at the time of the patient's second admission to the hospital, some three weeks previously, the senior resident surgeon, Dr. Van Epps, discovered a sloughing chancroid involving almost the entire foreskin of the patient's penis, necessitating excision of the sloughing part of the organ.

CHICAGO OPHTHALMOLOGICAL AND OTOLOGICAL SOCIETY.

Meeting held January 8, 1901, with the President, Dr. C. D. Wescott, in the chair.

Dr. A. E. Bulson, Jr., of Fort Wayne, Ind., read a paper on "*Gonorrheal Ophthalmia, with Complications, and Report of Cases.*" Reported in full on page 182.

Discussion.—Dr. F. C. Hotz said there was one point in the paper to which he desired to direct attention. As one of the first steps in the treatment the essayist mentioned the importance of incising the outer canthus in order to relieve the pressure upon the cornea, inferring that the pressure of the swollen heavy lids on the cornea endangers the life of the membrane. He does not believe that. He thinks the pressure of the lid does not interfere with the nutrition of the cornea, and that the danger to the cornea, in the first place, lies in local infection, and justly the essayist cautions the attendant about being careful not to injure the cornea because of the probability of opening up avenues for infection. Dr. Hotz believes that one of the principal sources of dan-

ger, which is as frequent as direct infection of the cornea, is due to impairment of the nutrition of the membrane caused by the intense infiltration of the ocular tissues. He has seen the cornea slough or melt away and break down in cases in which the infectious matter or discharge has been decidedly changed, no pus cocci being found in the discharge any more, but the dense, hard infiltration of the subconjunctival tissues persisted and extended all around the eye into Tenon's capsule, and this he thinks is the source of causing necrosis of the cornea. He does not think that canthotomy will save the cornea, and believes it is an unnecessary procedure.

He also believes that in the future these dangerous infiltrations will seldom occur, and better results will be obtained in the treatment of gonorrheal ophthalmia if protargol in strong solution is early and thoroughly applied. Being non-irritating, it can be applied right in the very beginning of the inflammation, and being non-caustic it needs no precaution to protect the cornea. The swollen lids need not be everted, but with a cotton swab the solution can be carried under the lids to every part of the conjunctiva.

Dr. William T. Montgomery said he had had considerable experience with cases of purulent and gonorrheal ophthalmia, and he has had fair success in treating them, but has never made incision of the external canthus. He agrees with Dr. Hotz in reference to interference with the nutrition of the cornea, that it is due to the infiltration of the subconjunctival tissue of the globe. It has been his practice for years in all cases of purulent ophthalmitis to eviscerate instead of enucleate, believing that the former is a safer operation.

Dr. W. F. Coleman stated that he had not had much experience with cases of gonorrheal ophthalmia in the adult, but thinks that the condition is not essentially different from gonorrheal ophthalmia in infants. He expected to hear one of the previous speakers touch on the use of strong solutions of nitrate of silver.

As to frequent flushings of the conjunctiva, mentioned by the essayist, who frequently entrusted the nurse to carry out these night and day, in his opinion the cases would not need flushing so frequently if efficient remedies were used, such as nitrate of silver. As to the question of the strength of nitrate of silver, he does not think 20 grains to the ounce adequate. If the oculist would use a dram solution, and, if necessary, a two-dram to the palpebral conjunctiva, carefully protecting the cornea, he would, as a rule, stop a virulent case—at least, check 50 per

cent of the discharge in twenty-four hours. In the vast majority of cases of ophthalmia neonatorum, if a two-per-cent solution of nitrate of silver be given recovery will take place, but may require four to six weeks' attendance. If a rule were made to use a twelve-per-cent solution of silver nitrate two to three per cent of the cases could be saved from going to destruction that would otherwise, under a weaker solution, be lost, and it would invariably shorten the time to one-quarter or one-third it would require if the two-per-cent solution were given. In these cases the author prefers formalin to any other antiseptic used. The eye is irrigated with hot formalin solution 1-10,000 from a fountain syringe, but the irrigations are not necessarily frequently applied.

Dr. Coleman mentioned a case of meningitis following enucleation for panophthalmitis. During the last fifteen years he has scarcely done enucleation in these cases. On clinical grounds evisceration is the safer of the two procedures.

Dr. C. D. Wescott said he was quite in accord with Drs. Hotz and Montgomery in regard to the necessity of canthotomy in these cases. He rose chiefly to mention one expedient which he had been resorting to for a number of years to avoid the necessity of frequent cleansing of the eyes by the nurse. All recognize the importance of drainage in suppuration, and if the edges of the lids in the class of cases under discussion are kept constantly anointed with sterile vaseline the accumulation of pus is very much lessened and it is not necessary to flush the eyes oftener than once an hour during the day and every two hours during the night. He is quite sure the rest that the patient gets from less frequent cleansing is very important. He is also convinced that the flushing of these eyes every fifteen minutes was undesirable in some cases in which he has seen it tried. If the accumulation of the purulent secretion can be prevented, by keeping the lid anointed with vaseline and flushing the eyes out thoroughly with a large quantity of warm boric solution, every hour in the day and every two hours at night, the cases get along much better than those in which he has seen other methods employed.

Since the advent of protargol he has found it necessary to use nitrate of silver only occasionally in these cases. He thinks the profession is indebted to Dr. Hotz, among others, for pointing out the necessity of using strong solutions of protargol in the desperate cases of purulent conjunctivitis. Oculists, at first, were timid and used it in five and ten per cent solutions, but the speaker has used it in twenty

per cent solution without causing any irrigation, and with results which are not to be compared with those he has obtained by the use of nitrate of silver. He sees few of these cases nowadays except in consultation, and feels much safer in recommending that the general practitioner care for them more than formerly, when he had to depend upon the use of nitrate of silver. He has seen a number of cases during the past year do well under the care of the family physician in which protargol was used once or twice a day, flushing and drainage being the only other measures employed.

Dr. Brown Pusey said that the essayist deserved thanks for his insistence on cleanliness of the eyes. When connected with the New York Eye and Ear Infirmary as house surgeon he saw many of these cases. He had treated as many as five or six a day, and as long as the eyes were kept clean it did not make much difference whether it was boric acid or water that was used, the patients would get well. The house surgeons at that institution told patients to keep their eyes clean, bathing them every five minutes if necessary. The point of great importance is to keep the eyes clean, and it did not seem to him of very much importance whether nitrate of silver or protargol is used.

Dr. William H. Wilder said that there was one line of treatment which had given him in the last few years gratifying results in cases of gonorrheal ophthalmia, and which he thinks should be more widely practiced by ophthalmologists. He referred to the use of permanganate of potash instead of the antiseptic solutions which oculists are in the habit of using. It is well known that this agent is a valuable means of treating gonorrhea of the urethra, and in his hands it has furnished excellent results in both ophthalmia neonatorum and in gonorrheal ophthalmia of the adult. He finds a profuse secretion disappears more rapidly with the use of permanganate of potash solution than with any other means. The gonococci becomes greatly diminished in number a short time after its use. He relies upon it more implicitly than he does on either the bichloride of mercury, formalin or any of the strong antiseptic solutions. He thinks the suggestion of Dr. Wescott to anoint the edges of the lids is a valuable one, because natural drainage is thereby facilitated, and he has been practicing this regularly in his cases. He applies the permanganate of potash solution 1-500 or 1-1,000 to the lids twice daily with a brush or swab the same as he would apply the strong solutions of nitrate of silver. In addition to this he has the conjunctiva irrigated regularly every hour with a 1-2,000 solution.

Dr. Albert B. Hale stated that some years ago Tuffier, of Paris, instituted a series of experiments in the use of constant irrigations of the urethra in cases of gonorrhea with the permanganate of potash, and these experiments tended to show that constant irrigation with this agent reduced the number of gonococci very much more rapidly than any other agent. The irrigations were given at the temperature of the body, or a little above 100° F. These experiments led to three conclusions: first, that constant irrigations had a good effect on cleansing a mucous membrane affected with the gonococcus; second, that at a little above the temperature of the body the membrane was most tolerant and the gonococcus most destroyed; third, that permanganate of potash (1-2,000 or 1-3,000) is the best solution to use. This same treatment has been advised for the ocular mucous membrane, and occasionally adopted with advantage. Of course, in these cases the use of silver salts or canthotomy would assist very materially in treatment.

Dr. E. F. Snydacker differed with one of the previous speakers relative to blenorrhea neonatorum and gonorrheal ophthalmia, saying that the course of the two diseases was different. The prognosis is so different that he does not see how the two affections can be compared. In blenorrhea neonatorum, if the oculist sees the patient in the earlier stages, before any harm has been done, the prognosis is always favorable, and the course of treatment milder. The prognosis in cases of gonorrheal ophthalmia is different in the adult, and the course of treatment more rigorous. He endorsed the use of permanganate of potash as recommended by Dr. Wilder, saying that he had seen excellent results from it in apparently desperate cases.

Dr. Clark W. Hawley could not agree with Dr. Hotz that the pressure of the swollen lid is not a serious matter. This point could be best illustrated by the citation of a case he remembered to have had several years ago in an adult. The patient had already lost the left eye, and the right eye was badly infected, both upper and lower lids being greatly swollen. He was so much afraid of pressure of the upper lid that he neglected, he thought, part of his duty. He applied a very wide plaster to the upper lid and fastened it to the forehead, which brought the edge of the lid away from the cornea entirely, and neglected to do the same thing for the lower lid. As a result of that an ulcer was produced from the pressure of the lower lid, but there was no disturbance from the upper lid. The ulcer took the form of the edge of the lower lid exactly, the edge of lid lying in the ulcer in its entire extent,

and the ulcer showing plainly that it was one formed by pressure of lower lid. Twice daily he applied strong nitrate of silver to the ulcer itself and whether his treatment saved the eye or not he does not know. At any rate the eye got well. The other eye was eventually enucleated. This case shows that pressure does have something to do in these cases with regard to the formation of ulcer.

Dr. George F. Fiske stated that while he agreed with Dr. Hotz that the pressure of the swollen lid is not the chief cause of the corneal trouble which follows, at the same time he believes that Dr. Bulson's treatment is correct in regard to canthotomy, for the reason that the nurse who flushes the eye so frequently causes pressure in trying to open the lids which are greatly swollen, and the canthotomy is of value in that respect. It could do no harm to the patient.

As to making incisions in the infiltrated tissues about the cornea, this is the most important part of the treatment in cases of gonorrheal ophthalmia. He has seen a case in which, when the lids were open, one could see nothing of the cornea on account of great chemosis and infiltration of the conjunctiva above and below. He does not think it makes much difference as to the use of solutions of nitrate of silver.

He mentioned the use of ice. The first case he saw when he went to Germany was a friend who had infected himself. He was a physician and was taken care of by his professional friends. No nitrate of silver was used, but ice frequently applied, and the eye recovered without any corneal trouble whatever. While ice is important during the course of the conjunctival disease, where there is any corneal infection, the minute the cornea is invaded the physician should use heat. He mentioned a series of five cases in which, when he saw the eye first, there was already perforation of the cornea, and all five recovered with fair or good vision, and the reason for using heat is that it helps materially to increase the nutrition of the cornea, and he would use heat here the same as he would in the ordinary cases of ulceration. Ice should not be used if there is any affection of the cornea.

Dr. J. Elliott Colburn has discarded entirely the use of nitrate of silver for some years in the treatment of gonorrheal ophthalmia, and thus far he has had no reason to regret it. He has, however, added one remedy not mentioned, namely, a weak solution of the peroxide of hydrogen, used one part to five of warm water in cleaning the eye. Personally, he uses a lid retractor, and thoroughly washes out the retrotarsal folds with the peroxide of hydrogen solution, introducing it

with a curved medicine dropped directly to the cul-de-sac. He has never had occcasion to resort to canthotomy. He has in two cases split the lid above the cornea and allowed the lid to retract. He did it in one case because of extreme swelling and ecchymosis, as he could not see how he could get relief from pressure sufficient from the opening of the canthus. He has used a warm solution of boric acid or a warm salt solution a great deal, and in addition to this he has employed hard vaseline, warmed until it was somewhat above the temperature of the body. After thoroughly cleansing the lids with the peroxide of hydrogen and flushing additionally with warm salt solution, using the lid retractors, he would fill the eyes literally full of the hot vaseline solution, using the hardest vaseline he could get that would cool at the temperature of the body, or a temperature which would make the lid somewhat stiff. In this way he has had successful results in treating gonorrheal ophthalmia in adults. He has discontinued the use of nitrate of silver for years because he felt it was dangerous and could only safely be used by the most expert ophthalmologists. He thinks it is safer to use the other solution, but believes cleanliness is one of the most important features of the treatment. He favors less frequent cleansing than that advocated by the essayist, and looks upon each case as a law unto itself. Hot vaseline solution is a very valuable adjunct to the treatment and drainage. After pus has formed he has found ice of very little value.

Dr. William E. Gamble corroborated what Dr. Wilder and others had said in regard to the value of permanganate of potash in cases of gonorrheal ophthalmia. The practitioner, in using any solution, should keep prominently in mind the fact that the cornea is to be preserved, hence an ideal solution would be a non-irritating antiseptic. Theoretically, permanganate of potash comes as near fulfilling the conditions as any antiseptic we have. Practically he had used the permanganate of potash as a wash in this way: He instructs the nurse to use a solution of permanganate of potash, 1-2,000, also a half-saturated solution of boracic acid, using these solutions alternately each hour or every half hour. Personally, he uses the nitrate of silver himself once daily in addition to the above treatment. He recalled one case in which a nurse made the remark that after the use of permanganate of potash solution there was less pus than after the boracic acid solution. He has no doubt the permanganate does markedly reduce the pus discharge. The reason he uses boric acid solution is because he is fearful that the color of the permanganate covers up the pus, so that he takes the precaution

of using the former to prevent any accumulation of pus being retained.

Another point. In the use of nitrate of silver one cannot tell what strength to use in the individual case, hence every case should be studied separately as to the strength of solution of nitrate of silver. The formation of an eschar by the silver solution would indicate that a weaker solution should be used.

Dr. Bulson, in closing the discussion, said that the cases reported had been considered unusually severe, and he thought such a class of cases demanded the thorough attention advocated. He believed that the swollen lids did produce pressure upon the eye, but was not so much to take pressure from the eye as to facilitate cleansing that the outer canthus is divided. In the cases described it would have been impossible for the oculist, and less possible for the nurses, to cleanse the eye as effectually as demanded without division of the outer canthus.

He could not agree with Dr. Colburn as to the use of the lid retractor in these cases, for the reason that it is almost impossible to use a retractor in aggravated cases of gonorrheal ophthalmia without serious risk of slightly abrading the cornea, thus giving opportunity for the introduction of infection.

He thought it ought to be remembered that the vitality of the cornea is impaired by the effect of the marked infiltration of the ocular conjunctiva, with its attending pressure which limits the nutrition to the cornea, and in reply to Dr. Hotz he would say that such a condition warranted scarification of the ocular conjunctiva, which operation relieved the chemotic tissues of much of the serum which produces pressure and limits the nutrition to the cornea.

He could not agree with Dr. Hotz that it was possible to keep the cornea and all the folds of the swollen conjunctiva free from the copious discharge with flushings every hour or less, and particularly if the outer canthus is not divided. If the physicians who do not divide the outer canthus in severe cases will, following cleansing, raise the oedematous upper lid with the retractor so that a proper examination may be made, they may be surprised to find an accumulation of gonorrheal pus which has repeatedly escaped the efforts to effect thorough cleansing through a narrowed palpebral fissure, and this retained pus remains to macerate the epithelium and breed further infection. Even with the outer canthus thoroughly divided, so that the upper lid can be freely raised from the eyeball, thorough cleansing is not easily performed, and it is to make

sure of keeping the eye fairly clean at all times, and with the possibility of removing the small quantities of pus that may escape a single flushing, that the cleansing at intervals of 15 or 20 minutes is advocated.

He is not so particular as to the cleansing solution to be used, as it is the frequent cleansing and not the character of the solution which effects results. He usually uses bichloride of mercury in the strength of 1 to 6,000 or 8,000, but has also employed boracic acid solution, permanganate solution, etc.

He could not agree with Dr. Colman that gonorrheal ophthalmia in the adult is similar to ophthalmia neonatorum and treated much in the same manner. In one the reparative process is much greater, and he could not remember of having lost an eye in a case of gonorrheal ophthalmia in the infant that had been seen by him before corneal complications set in. He had, however, lost eyes in gonorrheal ophthalmia of the adult when the cases had been seen very early after the introduction of the infection, and these unfortunate cases had led him to believe that the virulency of the infection and the rapidity with which it produces serious complications in the adult eye warranted the adoption of heroic measures if satisfactory results are to be obtained. Since adopting frequent flushings to maintain cleanliness, and division of the outer canthus to facilitate the cleansing, as advocated in the paper, a fewer number of eyes had been lost.

Regarding the use of a solution of nitrate of silver in the strength of 60 or 120 grains to the ounce, he could not advocate it for the reason that he believed that it was almost impossible to apply such a solution to the affected membrane sufficiently thorough, without having some of the solution in its partially diluted from spread upon the cornea, and through its escharotic action impair the corneal epithelium, thus rendering it possible for the introduction of infection.

As to anointing the lids he said that he had neglected to mention that this had been a practice for several years in the treatment of not only gonorrheal inflammations of the eyes, but any other inflammations of the eyes in which there is a copious discharge.

He has also employed applications of cold in the form of a small ice bag, but had never thought that it added to the favorable results if frequent flushings are maintained. He considered cleansing of the first importance, and this must be performed not only frequently, but with sufficient delicacy to prevent the possibility of injuring the cornea.

The point not mentioned in the discussion is the danger of menin-

gitis following enucleation in these highly aggravated cases. A number of good authorities advocate enucleation for panophthalmitis, but from experience he could not but believe that the operation is attended with danger, and unjustifiable when evisceration will accomplish equally good results and with a minimum amount of danger from meningeal complications.

Meeting of Chicago Oph. Soc., held Feb. 12, 1901, in conjunction with the Medico-Legal Society of Chicago. Dr. N. S. Davis, Jr., in the chair.

The subject for discussion was *"The Medico-Legal Relations of Ocular Diseases and Injuries."*

Hon. Joseph E. Gary, Judge of the Superior Court, read a paper entitled, *"The Legal Basis of Compensation in Injuries of the Eye."*

This paper will relate only to what is, not at all to what ought to be.

The judicial system of England, and of all countries which have derived their institutions, in a general character, from England, has always held, and so far as can now be foreseen, always will hold, the trial by jury of all questions of fact to be one of the principal safeguards of the rights of the subject or citizen.

The law, either statute or, in legal contemplation, unwritten, though printed in countless court reports, states the principles on which rights depend or wrongs are redressed, but whether the facts giving rise to the right exist, or whether the wrong was done, and if done, the measure of redress, are usually questions solely for a jury, to be decided upon evidence presented at a trial between the parties interested.

The law provides that one injured in his person, through the negligence or carelessness of another, being himself in the exercise of ordinary care for his own safety, is to be compensated for that injury by him whose negligence or carelessness caused the injury.

In the very nature of trial by jury there can be no uniformity, or even consistency, in measuring that compensation.

The jurors in one case are other men than those in another, and very likely of a different temper and disposition. One suit is prosecuted or defended by lawyers more or less able than those engaged in another.

The abstract rule of compensation only, with no reference to the character or standing in society, the wealth or poverty of the respective parties, is simple and certain; but like Bunsby's observation, the bearings of it lies in its application.

Pecuniary loss in the inability to attend to business or to earn money may, in many cases, be the subject of an arithmetical calculation as to time past, but with no certainty as to the future in cases of alleged permanent injury. So also the expense of medical attendance, nursing and drugs, and other curative agencies, may be computed.

But beyond these losses and expenses, the law recognizes pain and suffering—mental as well as physical, if the mental is the consequence of the physical—as elements to be taken into account in determining the amount of compensation.

In this matter of pain and suffering, physical or mental, there can be no evidence as to what will be a fair and adequate compensation. No opinions of witnesses, no references to other cases, and amounts there awarded for like or similar injuries, are admissible in evidence as guides or suggestions to the jury as to their verdict in the case on trial.

The extent of the physical injury may be described, truly or falsely, with great uncertainty on the part of those who listen as to what is true or what is false. Medical experts in giving descriptions of the injured plaintiff are often in conflict, especially if that plaintiff be a woman alleging internal injury. And in their opinions on permanence of the injury or probability of ultimate recovery, they are apt to be as little in accord.

There is, there can be, no fixed rule or scale to balance pain with money.

But still more vague and uncertain is the ratio when to pain is added dispersement deformity.

I will illustrate by decided cases:

A boy in humble life, six years of age, lost his leg at the hip joint, so that no mechanical substitute can be adjusted. Many trades and avocations can be prosecuted as successfully by a man with one leg as by a man with two legs.

He recovered $15,000, a sum which can be justified only by taking into account something more than pain and pecuniary loss.

A girl of the same age broke the femur, which, in healing, left one leg two inches shorter than the other, and the pelvic region tipped to one side for adjustment.

She was awarded a like sum. In those cases the juries must have thought of the probable effects of the injuries upon the future domestic lives of those children.

When the injury is maliciously inflicted, as in assault and battery or false imprisonment, the damages to be awarded are not limited to compensation. And when the injury is the result of such wanton and reckless carelessness, as to indicate indifference to, or disregard of, the safety of others, as in furious driving through thronged thoroughfares, the same rule applies.

In such cases of malicious or recklessly careless injury, what are called punitive, vindictive or exemplary, damages may be assessed for the purpose of punishing the wrongdoer, and as an example deterring others from like wrongdoing. In making the award of such damages the jurors are without other guide than their own impulses.

From this description of the method in which damages in the way of compensation for injuries, and of punishment and example, are assessed, it is apparent that no uniformity or consistency can be expected in results. Much of the administration of the law has no claim to any scientific basis.

But no closet speculation as to what ought to be can affect the practical operation of the cumbrous machinery by which society endeavors to do justice between its members.

Dr. H. V. Würdemann, Milwaukee, followed with a paper on *"The Economic Valuation of Vision."*

Würdemann is convinced that a correct estimation of the effect of injuries to the visual apparatus upon the earning powers may be obtained by a simple mathematical calculation, based upon the method proposed by Magnus of Breslau. The literature of visual economics is almost entirely in German. The book of Magnus (*"Leitfaden für Begutachtung und Berechnung von Unfallsbeschädigungen der Augen"*) and a book in the English language now in press, in which Mangus and Würdemann have exhaustively treated the subject, with the exception of a brief essay by Hansell and notes scattered here and there in the literature, are the only works in existence upon this eminently important subject.

The earning ability for any gainful occupation requiring eyesight is practically synonymous with the visual earning ability, and injuries to the eyes affecting the vision have a direct detrimental effect upon the earning capacity of the individual. W. speaks of the present empiric methods used by insurance companies, corporations and pension bureaus and the courts for settlement of damage claims. He thoroughly dis-

cusses the subject from the legal point of view, and explains the German Accident Insurance law, which has led to a more thorough understanding of the subject. It is the province of the physician to estimate the proportional loss to the earning ability resulting from disease or traumatism; the amount of monetary compensation should be left to the business corporations and the courts of law after the opinion of the physician has been expressed. The certain scientific standards by which the various factors composing the sense of sight are accurately expressed has been reduced to a working formula by Prof. Magnus.

The complete earning ability depends upon three factors: 1. The unimpaired functional power of the bodily organs. 2. The technical knowledge necessary for the carrying on of the vocation. 3. The ability to compete in the labor market. Normal physiologic vision consists of a series of different factors, i. e., the central acuity, visual field, light and color sense, adaptive faculty, muscular movements and cerebral processes all acting together to produce sight. Each of these numerals are given their specific and relative value in the equation, the whole sum equalling normal physiologic vision. The formula for the earning ability is thus given:

$$E = C \text{ max. } \sqrt{P}\ \sqrt[4]{M}\ \sqrt[x]{\frac{C_1 + C_2}{2}\sqrt{P}\ \sqrt[4]{M}}$$

in which E = earning ability, C max. the sum of the visual acuities, $\sqrt{P}$ the visual field, $\sqrt[4]{M}$ muscular movements, $\sqrt[x]{\frac{C + C_2}{2}\sqrt{P}\ \sqrt[4]{M}}$ the ability to compete. The several factors entering into the normal physiologic vision are not necessarily included in the formula used to estimate damage thereto, as damage to these factors necessarily causes damage to the other factors and is so considered; i. e., these are the functions of cerebral vision, adaptive faculty, light and color sense, which are included in the central visual acuity, visual field and muscular movements. Likewise, in the complete formula for the earning ability, the technical knowledge necessary for the carrying on of the vocation is not necessarily included. Although this formula seems a rather heavy mathematical proposition, its handling is extremely easy, for we simply replace its several factors by the value of the function. Thus, if all be uninjured, the earning ability = 1; if any be injured the proportional value is inserted into the equation which is reduced. The

valuation of the root is very easily determined by looking at the tables which have been compiled by the authors, or by estimation of their valuations in a diagram, and thus the calculation involves but a simple example in multiplication and takes but a few minutes' time.

There is a considerable difference between the scientific definition of blindness and that of economic blindness. An individual is only blind according to the scientific sense when his light perception has failed, but in reality, for economic purposes, he is blind when the faculty of sight has been weakened to such an extent that he cannot earn a living. The highest and lowest points of scientific visual acuity do not correspond to those used in business; i. e., a day laborer may have his visual acuity reduced to as low as 50 per cent of normal yet be able to continue his work just as well as before, but if it were reduced below 5 per cent of normal he would be unable to do any of his work; in the case of a skilled workman the reduction to this extent would greatly interfere with the work, and thus a skilled mechanic could not lose more than 25 per cent of his visual acuity without economic damage, and if he would be reduced to 15 per cent he could not do any of his work.

The various trades and professions are divided into two groups, which require more or less degrees of visual acuity. The valuation of the several factors entering into economic vision are exhaustively considered, and the relative importance of the effect of the disturbance of any of the elementary factors of the formula is dwelt upon in detail with examples drawn from actual practice. There is a difference between scientific and economic monocularism. Economically, an eye should be considered blind if it is not used; for instance, if there is only monocular vision. For scientific monocularism the sense of sight must be gone in one eye. The question of weak vision from an economic standpoint is described.

From the results of experience and of mathematical calculation, by means of this formula, it is clearly shown that in trades demanding high vision, a person becoming suddenly one-eyed by accidental injury, loses 30 per cent of his earning ability for the first year after the accident and 20 per cent thereafter, and for the lower grades it is 27 per cent for the first year and 18 per cent thereafter. Where there is a gradual loss of sight in one eye following an accident in trades requiring higher visual demands, the proportion is 21 per cent, and in professions with lower visual demands 18 per cent. The question of claims

for damages by reason of the loss of one eye through accident is exhaustively discussed as well as specific injuries affecting the visual field, color muscles or causing weak vision in any way. Consideration is likewise given to instances where weak vision existed before the accident.

The economic damage to the individual from loss of vision through accidents depends upon the percentage of the loss of earning ability, upon the wages that the plaintiff has been earning and the character of his work and his age. Taking these facts into consideration and accepting certain wage standards and probable duration of working life and the percentage of economic damage as factors, the damage to the individual may be exactly shown in dollars and cents. The settlement of claims for damages should take this economic damage into consideration as the principal element. This, however, is only one of the legal factors involved. It should be modified according to American law by reduction being made in favor of the defendant in case of extenuating circumstances or contributory negligence and addition made thereto of actual expense incurred by the plaintiff during his illness and damages for pain and anguish suffered by reason thereof; the amount thereof must always be empirically estimated by the courts.

W. considers that competent practitioners of medicine or law or insurance officials may by these methods exactly determine in a manner fair and just to all parties the amount of damage to the earning ability of their clients, which may have occurred as a result of accidental injuries to the eyes.

Dr. F. C. Hotz spoke on the subject of *"Damage Suits from the Standpoint of the Physician."* In damage suits for the loss of an eye the expert is greatly embarrassed by the want of plain Anglo-Saxon words for the different parts of the eye. The juror does not know what you are talking about when you speak of the cornea or conjunctiva; the only way to make him understand is to describe the part and to point it out to him on a model.

Different Valuations of the Eye.—People seem to value their eye a great deal more when it is lost than when saved. "Sight is priceless" seems to apply only to the lost eye; damage claims range from $10,000 to $50,000; they are never less than $10,000. But 1-10 of this amount is regarded by most people as an exorbitant price for the successful restoration of the sight; $1,000 fees are rare birds, bagged perhaps but once in a lifetime by few oculists!

Motives for Damage Suits.—Most suits are brought by people of the lower classes. They appreciate professional services only if they attain the desired result; they praise the doctor when he succeeds, but just as readily damn him when he loses. They have a remarkably short memory, and quickly forget what the doctor has said about the risks of an operation or the chances of recovery from a very grave disease. If the eye is lost they are always disposed to blame the oculist for the unfortunate result. In their opinion the loss of the eye proves that the doctor has made a mistake. Encouraged by a certain class of lawyers, who have no reputation to lose, they sue for damages in the hope of frightening the oculist out of a few hundred dollars. (Blackmailers.)

Then again, it is a common failing of human nature that people do not like to pay for services if they do not get what they expected. If the eye is lost and the bill for services rendered a damage suit is threatened to avoid payment of the bill. (Dead beats.)

These two classes of plaintiffs figure in the majority of damage suits. But in a small number the plaintiff is honest in his belief of the doctor's guilt. Their belief is usually founded on the "post hoc ergo propter hoc" argument; because the eye took a bad turn after a certain application they conclude that application must have done it. And this belief becomes a firm conviction if—as it happens not very seldom—unfortunately another physician imprudently ventures an opinion on the statement of the patient. Every reputable physician, therefore, should make it a strict rule never to make any remarks to a patient or his friends about his disease or his doctor. The positive refusal to give an opinion on hearsay evidence will often act like a cold douche upon the excited brain of the would-be plaintiff and make him see things in a different light. The lawyer, too, may sometimes induce his client to abandon the idea of suing a physician in good standing if he impresses upon him these facts: 1. That physicians practice to cure, and not to kill; to relieve and not to inflict damages. 2. That it is in every physician's own interest to attain the best result possible. 3. That no physician has ever gained a high standing and great reputation by ignorance, carelessness and want of skill.

Discussion.—Dr. Harold N. Moyer: We hear many criticisms of the law and of the limitations of expert testimony, and quite as many remedies are advanced to cure these evils. Judge Gary gave his estimate of the relation of a personal injury to the common law. Most

of the remedies that are offered relate to some modification in law in limiting the powers of the jury. Dr. Moyer does not believe in it. The common law as administered in this community is one of the greatest of human institutions. It is subject to criticism, perhaps, in an occasional case, where it is palpable that the law was weak in its application. But taken in its entirety, the common law is a wonderfully perfect thing. It is the growth of the human mind. There are many criticisms made of expert testimony, but its limitations are not as some suppose for the purpose of hindering the introduction of testimony, but for the purpose of excluding error.

Another class of world-betterers are continually urging us along the line of doing away with the judgment of jurors and substituting the opinion of experts. That is the rule in France and in Germany. These formulæ which were given us tonight are really a part of that very elaborate insurance system adopted in Germany, which attempts to estimate mathematically all sorts of injuries. The same thing has been adopted in England under the Employers' Liability Act. After three years of operation of that act there is talk of its repeal. It works a grave injustice to the employers and to the workman as well. Since the adoption of that act employers have been very careful to employ only those men who are free from every defect. As a result, a large number of workmen are stranded, because they cannot show an absolutely perfect physique. Judging from a rather wide experience in our courts, Dr. Moyer believes that the bulk of expert testimony given in our courts is good. Some of it is based on ignorance, but there is very little that is venal. Now and then a glaring case comes up that overshadows the others, and then we forget about the other 90 per cent that are fairly and justly adjudicated.

The figures given by Dr. Würdemann are a distinct advance upon the guesswork heretofore employed. As an undeviating rule, they would work injustice, but as arriving at a just approximation they are of value.

Judge Jos. E. Gary: As Dr. Moyer says, the earning capacity should be taken into account as the basis. It is now accepted, but the element of compensation for pain enters here. There are always all sorts of calculations made for the jury—how long a man would live and how much he would earn—so that, theoretically, they are all right.

Dr. H. V. Würdemann: The earning ability is, of course, but one factor upon which compensation for injury should be allowed. There

are, however, others which come into play by reason of equity and the precedents of American legal practice, and by which the compensation should be made larger or smaller. That is one thing that the expert can bring to the court room, and say that, in his opinion, he knows positively that this man has lost a certain percentage of his earning ability, and then leave the rest to be figured out by the courts themselves.

In bringing applied mathematics before one's friends one is apt to have the reductio ad absurdum applied, especially by those who know nothing about it. When we work out problems in this way we find that the damages are about the same as have been allowed from experience. A workman should not be allowed to claim fifty thousand dollars of damage when he never expected to earn that much in his life. While all men are created equal and free, yet they differ vastly as economic factors in the world. Some are worth more to the world than others; therefore, when these lose a portion of their functions they should be awarded more than those whose functional powers are less in economic values.

In regard to Dr. Hotz's question about millionaires' fees, we all know that a patient "is willing to give anything to get his eyesight back" before the operation. After he has recovered it he may grudgingly give a few dollars, and that we have to get by the help of the lawyer, with whom we must divide the fee.

SAN FRANCISCO SOCIETY OF EYE, EAR, NOSE AND THROAT SURGEONS.

Regular meeting January 24, 1901. Henry L. Wagner, M. D., President.

Dr. A. Barkan presented a man aged 32; single; teamster; the subject of *Congenital Arrested Development in the Fundus of Each Eye.* Has had a good education, and no difficulty in reading thus far with the right eye, and complains only of bright sunlight. Health is perfect. There is nystagmus horizontally, which is increased when an object is fixed straight ahead. When turning the eyes to the right they become fairly steady. There is also nystagmus upward, downward and straight ahead, and the patient is unable to move the right eye beyond the meridian line towards his nose, showing faulty development or paralysis. The left eye cannot be moved but a little beyond the meridian line, and not into the outer angle.

The right eye is fairly well shaped on outer inspection. Media clear; fundus shows centrally atrophic patches in the choroid; optic disc elongated, with deep excavation adjoining it on the temporal side. The change from the plane of the disc to the excavation coloboma is abrupt, and the latter is deep.

The left eye is small in all its dimensions. That is strikingly so with regard to the cornea, which, though quite small, probably half the size of the other, is well formed in other respects. An examination with Javal is very difficult, owing to the nystagmus, but shows considerable astigmatism against the rule, and some irregular corneal astigmatism. Dr. Barkan had found it impossible to see details in the background of the left eye distinctly, but there is a polished spot corresponding probably to the posterior staphyloma in the other eye, and some dark pigmentations in the choroid. Vision in the right eye is $\frac{9}{200}$. He reads, with the eye turned into the outer angle, Snellen .5, with some difficulty in six-inch distance. Vision in the left eye is about $\frac{4}{200}$. Can read with that eye a few letters of the largest print of Snellen. Convex glasses are rejected altogether and concave glasses seem to produce no improvement.

The interesting feature of this congenital arrested development and the defects in the fundus of both eyes is that the patient is one of seven in family. His brothers and sisters all enjoy perfect sight. On his mother's side eyes have always been good. On his paternal side the patient's grandfather, and again the latter's grandfather, have had the same defective eyes.

Thus in four generations the same developmental trouble occurred twice with one generation always intervening. Another interesting feature is that the patient has no trouble in his occupation as a teamster, driving through the crowded streets and attending to all the duties of his position.

Dr. L. C. Deane reported an *Operation for Convergent Strabismus.* He presented the case not on account of any peculiar features, but because he had taken a photograph before and after the operation. The patient was aged 12 years. When about 4 years of age she had a severe attack of the measles, followed by a marked esotropia, which resolved itself into a fixed condition, the right eye squinting continually. Three years previous to consulting Dr. Deane she was operated on by a local oculist, who evidently performed a tenotomy of both internal recti. The operation was followed with an unfavorable result, the eye remaining

in approximately the same position as before. A year later, the mother feeling that something could be done, as the eye was a great disfigurement, consulted another oculist, who repeated the operation with a similar result. Dr. Deane saw her first in June, 1900. R. V. $\frac{3}{20}$. With +5. D. sph. ⊃+1.25 D. cyl. ax. 80°, V.=$\frac{20}{100}$. L. V. $\frac{20}{20}$. With a cycloplegic V. is $\frac{20}{20}$ with +5 spher ⊃+1 D. cyl, ax. 90°. O. D +4.50 D. sph. ⊃+1.25 D. cyl. ax. 80°; O. S. +4.50 D. sph. ⊃+1 D. cyl. ax. 90° was prescribed to be worn continually.

The right eye converged 40 degrees and rolled up slightly. The child was going to the country for a few months; practice was advised for the right eye by screening the left eye for six hours during the day. She returned in the middle of October, and while the right eye had gained nothing in acuity of vision, she was able to fix with it, and this was very uncertain before practice. The eyes were now out, shown to be perfectly concomitant in their movements. On November 2 a complete tenotomy of the internal rectus muscle was done, also a tenotomy of the external rectus, advancing it and re-stitching it to the globe by three scleral stitches. Five weeks after the operation she had binocular single vision, though accompanied by occasional headaches and a homonomyous diplomia. By a slight effort she could overcome the diplomia. Atropine was used for three weeks following the operation, to eliminate all accommodation, and hence any hyper-convergent effort during the process of healing.

It is hard to predict the exact outcome of these cases, as several unmeasurable factors have to be taken into consideration. Cicatricial contraction has a tendency to counteract the effect of the operation. In this case, however, the contraction will be exerted on both sides, especially of the advanced muscle, which will have a contrary effect by improving the condition, providing the operation does not quite correct the defect, which is here the case. The reason for proceeding cautiously and awaiting the result after the healing, and the formation of the scar tissue, is that there is a certain danger of such a condition becoming overcorrected. Here is an internal rectus muscle that has been completely tenotomized three times, and opposing it a muscle that has been shortened and advanced with deep and strong scar tissue surrounding it. A tenotomy not only lessens the purchase a muscle has upon the globe by allowing it to retract, but also weakens its contractile power. It is well known, however, that an over-powerful muscle will become

paretic by continual tenotomies and allow its antagonist to draw the eye so as to produce an opposite heterotropia.

Discussion: Dr. Eaton said that the pictures show a very good result. Advancement has many advantages. He thought the doctrine is correct that wherever possible, when a muscle is advanced in one eye, the same muscle in the other eye should be advanced; or, to put it in other words, or more correctly, whenever a new or more normal position is given to a muscle the same muscle in the other eye should be treated in a corresponding manner.

Dr. Payne said he had seen this case of Dr. Deane's, both before and after the operation. His impression of the case was that the converging was so far inward that the tenotomy was not complete, and some fibers were left, probably above, which gave the eye the position; this, together with the scar tissue, impressed one that the two tenotomies had not been complete. Dr. Barkan asked where Dr. Deane found the internal rectus muscle. In what position? Dr. Deane replied: In about its normal position, nearer to the cornea. The connections were enormous, extending along one-quarter the edge of the cornea. There was some converging power; enough to justify one in making the advancement of the muscle.

The President presented some cultures which he had taken from the ear and throat of a little child 2½ years old, to which he was called in consultation. The little one showed at first an acute inflammation of the middle ear. He waited under expectant treatment for 48 hours and then made a paracentesis of the drum. For a few hours no serous fluid was discharged from the middle ear; later some bloody serum did appear. The temperature was 102½ at the beginning. On the third day the ear was nearly free of any discharge, and the temperature normal. Forty-eight hours after this a fever of 104 degrees set in, and as the ear did not show any symptoms, the throat was examined carefully. On the soft palate, and on the right tonsil, a white patch about as large as a middle-size bean was found. Fearing these patches might be diphtheritic, a bacteriological examination was made, which revealed staphylococcus pyogenes albus, and also Pfeiffer's bacterium. We should be careful of our diagnosis before a bacteriological examination is made. Five days later this child was perfectly well.

The President also reported a case of *Nyctalopia in a Boy Seventeen Years Old,* and showing *Retinitis Pigmentosa.* The annual election of officers being in order, the following were elected: President.

Dr. F. B. Eaton; First Vice-President, Dr. L. C. Deane; Second Vice-President, Dr. R. D. Cohn; Secretary, Dr. M. W. Frederick; Treasurer and Librarian, Dr. G. W. Merritt; Members of the Executive Committee, Drs. E. J. Overend and G. P. Pond.

The Ophthalmological and Otological Society of Washington, D. C., Dr. S. O. Ritchey, president, held its first fall meeting for 1900, October 9, at the residence of Dr. W. K. Butler, who read the paper of the evening entitled "The Necessity for Wearing Glasses," which was well received and heartily responded to by the members.—*Philadelphia Medical Journal*

The Training of Sight.—Lord Wolseley having lately remarked upon the good sight of the Boers as one cause at least of their good shooting, and having ascribed this good to its constant exercise in the open air, Mr. Brudenell Carter has pointed out that it is not merely a question of open air but of the training of the sight upon things that are far off and difficult to see. The defective vision possessed by so many children who have been brought up in towns is not caused by errors of refraction alone, common as these are, but an actual deficiency in acuteness of vision, a lack of development in the nervous structures involved in the act of seeing. "Vision," he says, "like every other nerve function, must be cultivated for the attainment of a high degree of excellence. The visual power of London children is not cultivated by their environment. They see the other side of the street in which they live, and the carts and omnibuses of the thoroughfares. They scarcely ever have the visual attention directed strongly to any object which it is difficult to see or which subtends a visual angle approaching the limits of visibility; and hence the seeing function is never exerted to anything like what should be the extent of its powers. With a country child the case is widely different." Mr. Carter would like to see a place given to excellence of vision among the various physical qualifications which are habitually tested by competition, and for which prizes are awarded, and he urges the desirability of volunteers taking up exercise and training the sight. "It is at least certain that our riflemen would not shoot worse for having learned to see better."—*Hospital.*

NEWS ITEMS.

Personals and items of interest should be sent to Dr. Frank Allport, 92 State Street, Chicago.

The following papers will be read, by invitation, in the section on Ophthalmology, at the St. Paul meeting of the American Medical Association, June 4-7, 1901:

A. Barkan—Foreign Bodies in the Eye.

G. M. Gould—On the Treatment of Heterophoria Other Than Operative.

G. C. Savage—The Operative Treatment of Heterophoria.

E. Jackson—On the Treatment of Strabismus Other Than Operative.

C. F. Clark—On the Operative Treatment of Strabismus.

F. Allport—Report of Committee on Transportation Employees.

H. Friedenwald—On the Newer Pathology of the Retina.

C. A. Wood—Sketch of the Life of Helmholtz.

H. Friedenwald—History of the Ophthalmoscope.

Dr. W. C. Posey, of Philadelphia, has lately restored the mental equilibrium of two patients by the removal of cataracts.

Dr. A. F. Strickler has located in Sleepy Eye, Minn. He is a graduate of the University of Michigan, and has studied abroad, having taken a special course on the eye, ear, nose and throat in Vienna.

The ninth annual report of the Buffalo, N. Y., Charity Eye, Ear and Throat Hospital of Erie county shows 1,983 new cases treated during the year. The hospital authorities are well pleased with the workings of the new law which makes it a misdemeanor to obtain treatment under false pretenses.

At a meeting of the Orleans Parish Medical Society, September 22, 1900, Dr. E. W. Jones reported a case of blindness, the result of drinking vinegar. The patient was a lady of 30 years, who being very stout, wishing to reduce her fat, was advised to drink vinegar, which she did, abstaining from water for three weeks; and at the end of three weeks she found herself completely blind. The eye grounds revealed only a paleness of the optic discs. Strychnia was given in increasing doses and vision has been partially restored.

It is generally believed by ophthalmologists that often when the pupils are illuminated by lights of different intensity they are approximately equal excepting in very sensitive individuals. Pick, however, has observed that in many cases of epilepsy, neurasthenia and other forms of functional phychosis, the pupils may vary considerably if the patient stands with a side toward the source of illumination, as for example, a window. Under these circumstances the pupil receiving the most light is always narrower. This seems to be due to a hyperesthesia of the centripetal apparatus.—*Philadelphia Medical Journal.*

Strzeminski has succeeded in curing sixty-three cases of chalazia by absorption, omitting all those that were less than six weeks' duration. To accomplish this result he employed an ointment composed of pure iodine, 20 centigrammes; iodide of potassium, 60 centigrammes; lanolin, 4 grammes; oil of vaselin, 80 centigrammes, and distilled water, 80 centigrammes. This ointment was rubbed on the eyelids every night at bed time, and allowed to remain until morning. The length of time required to effect the desired result varied from two weeks, or less, to two months. If, at the end of the latter time, the tumor still remained, it was excised.

Metastatic Choroiditis After Pneumonia—Germann.—During convalescence from a typical croupous pneumonia a purulent metastatic iridochoroiditis appeared, with symptoms of meningitis and death in six days. Another fatal case is described, in which croupous pneumonia was followed by endocarditis, embolic retinitis and panophthalmitis. Pure cultures of the diplococcus were derived from the anterior chamber. The only similar case described at length in literature was reported in 1892 by Herrnheiser, metastatic panophthalmitis with diplococci in the choroid, consecutive to croupous pneumonia, but

Blessig, Eversbusch and Natanson have each observed a case of metastatic iridochoroiditis consecutive to influenza.—*St. Petersburg Med. Woch.*, December 15.

"Second Edition of Norris and Oliver's System of Diseases of the Eye. The demand for the four-volume System of Diseases of the Eye by Norris and Oliver has been so great that the publishers, J. B. Lippincott and Company, have been compelled to bring out a second edition of the work."

Dr. Leopold Javal, the eminent ophthalmologist, has recently been made an officer of the Legion of Honor. Dr. Javal recently lost his sight from glaucoma. He began his professional life as a mining engineer, but while translating Helmhotz's Physiological Optics, he became fascinated with medicine and took up its study, and afterwards devoted himself to ophthalmology. He was at one time a member of the Chamber of Deputies, and while serving as such he was the means of passing the "Seven Children Law," which exempts from taxation the parents of families of not less than that number. A large portion of his time is now given to the improvement of the means for enabling the blind to read and write.

At the regular meeting of the Buffalo Academy of Medicine, Section of Ophthalmology, etc., September 17, Dr. A. L. Benedict read a paper entitled "Eye-strain or Gastric Reflex," in which he contended that too large an importance was attached to eye-strain as a causative factor in the production of abnormal conditions, it being rather the result of these conditions. He believes that gastric disturbances are usually at the bottom of those conditions, laid at the door of eye-strain. In discussion, Dr. C. G. Stockton could not at all agree with the position taken, as his experience proved conclusively that eye-strain is repeatedly the cause of pathologic states, and many times inducing disturbances of digestion which would produce the symptoms. Dr. A. A. Jones differed with the speaker, contending that while gastric reflex is an extremely important factor, and may bear either the relation of the cause or the effect of eye-strain, eye-strain is very often the primary cause. Drs. E. Starr, A. G. Bennett and A. A. Hubbel said that their experience in the correction of errors of the eye as treat-

ment for diverse pathologic conditions leads them to the conclusion that eye-strain is often the sole cause of these conditions.—*Philadelphia Medical Journal.*

Can Interstitial Keratitis be Prevented in the Offspring of Syphilitic Parents?—Dr. Peter A. Callan, of New York, read a paper with this title. He said that this form of keratitis occurred in the growing period. Rarely was there a longer interval than ten months before the second eye became inflamed. Interstitial keratitis, due to acquired syphilis, was very rare. The offspring of syphilis showed the inherited taint in a small percentage of cases only, if those dying before the age of five years were excepted. The author's conclusions were that physicians could delay, but could not wholly prevent the outbreak of interstitial keratitis in a certain number of cases.—*Medical Society, State of New York.*

It is with regret that we announce the death of Dr. Osio, of Madrid. He was born at Caracas in October, 1840, and graduated in 1805. Afterwards he attended the clinics of Sichel, Desmarres, Wecker, Galezowski, in Paris; Critchett, in London; Graefe and Hirschberg, in Berlin; Von Magnus, in Breslau, and Arlt and Fuchs, in Vienna. In 1869 he established himself in Barcelona as an oculist, and here he manifested his scholarly and scientific attainments as a fellow worker on the *Independencia Medica,* and also as organizer of the Revista de Ciencias Medicas, as well as the Hospital del Sagrado Corazen, which latter was the first institution to make possible the study of our specialty in Spanish infirmaries, and where that excellent surgeon, Dr. Cardenal, has continued to work. Here Osio began his lectures in ophthalmology, which he continued as a member of the Medical Faculty in Barcelona. In 1881 he moved to Madrid, where he displayed the same untiring activity. As a warm friend of the people, he wrote the little book on L'Oftalmia Purulenta del Recien Nascido (Madrid, 1886). He translated Mooren's work, Relacion Entre Padecimientos Uterinos y Las Afeciones de Los Ojos (Madrid, 1884). Although he was ill for several years, he stayed at his post like a true soldier until his death, on July 21, 1900. (*Centralblatt f. Praktische Augenheilkunde.*)

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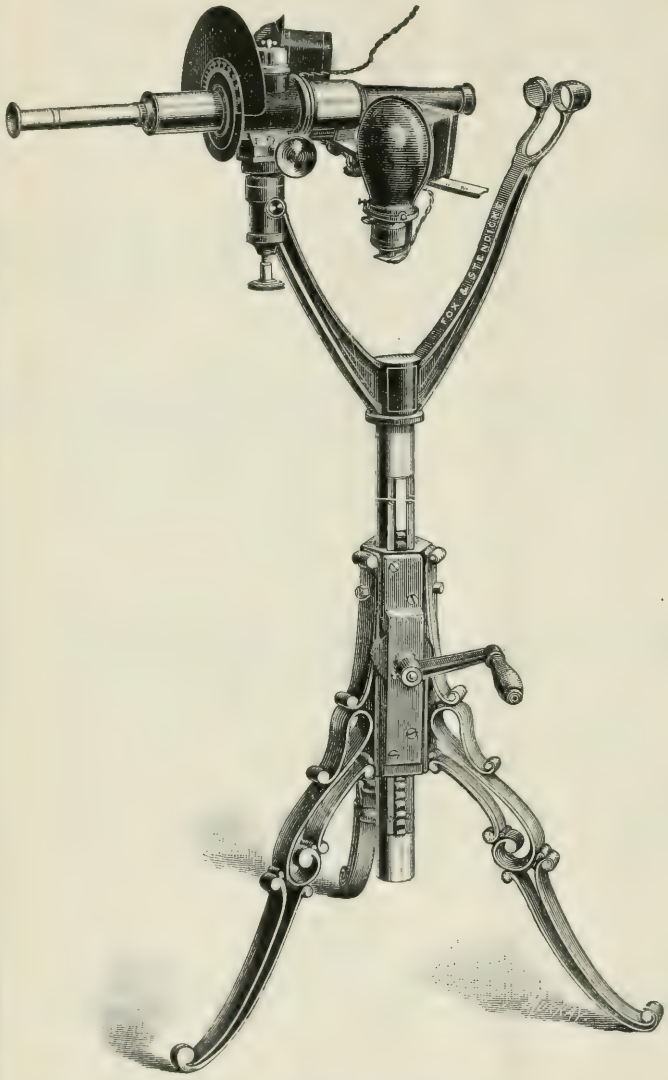

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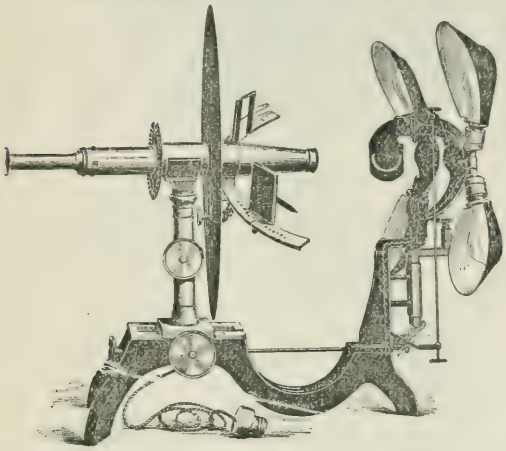

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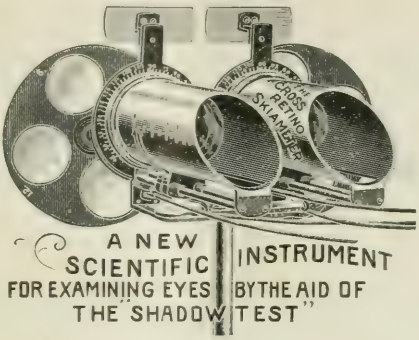

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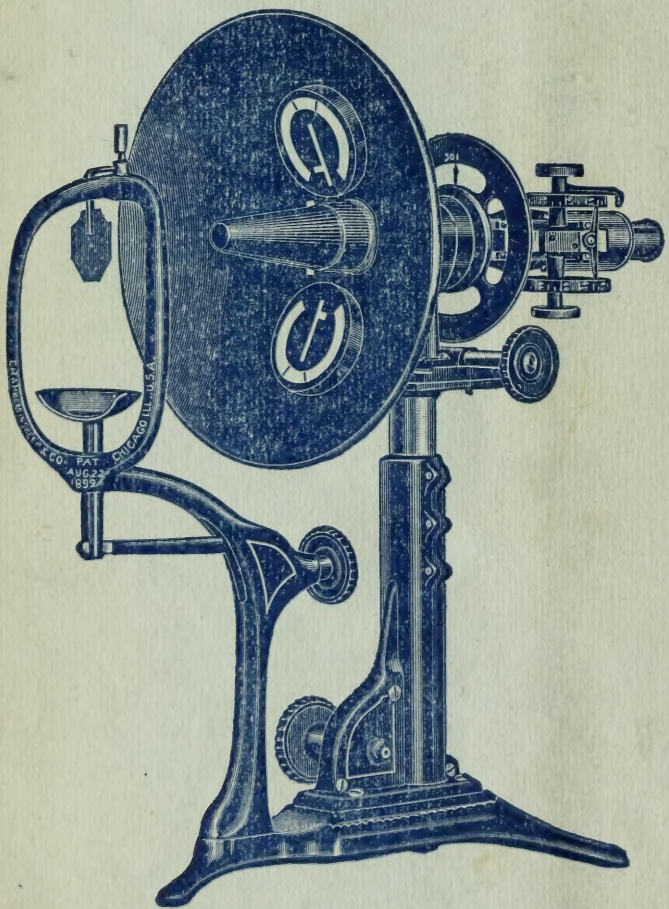

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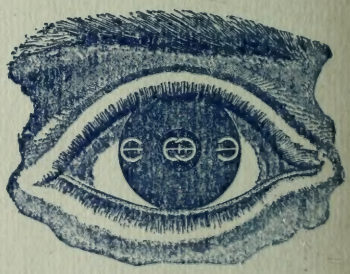

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